UNIVERSIDADE DE LISBOA

Instituto Superior de Economia e Gestão

An Agile Approach for IS/IT Benefits Management

JESUALDO CERQUEIRA FERNANDES

Orientador: Professor Doutor Mário Fernando Maciel Caldeira

Tese especialmente elaborada para obtenção do grau de Doutor em Gestão

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Abstract

Investments in Information Systems and Information Technology (IS/IT) by organizations around the world have been increasing, as the competition grows fierce. Despite this increase, many organizations feel that their investments do not get the return they expected in terms of real benefits to the business.

There have been several attempts to create methods to improve the success of the investments of organizations in the implementation of IS/IT and methodologies have been devised for this purpose, although with modest improvements. One of the main methodologies is the Benefits Management methodology created in the University of Cranfield, widely recognized as a great methodology with proven results, although its adoption is not as high as it would be expected and desirable.

This research project looks at the published literature to find the reasons for this problem and then, resorting to Design Science Research methodology, creates artefacts aiming to help solving some of the known problems in the adoption of the Benefits Management methodology. The created artefacts, as defined by the Design Science Research methodology, were then evaluated with a case study that took place in a large Portuguese bank.

The results of the evaluation indicate that the artefacts created during this research project were useful and helpful for the adoption of the Benefits Management methodology created in the University of Cranfield.

Keywords: Benefits Management; Information Systems; Information Technology; Agile Software Development; Agile Project Management.

Resumo

Os investimentos em Sistemas de Informação e em Tecnologia da Informação (IS/IT) por parte das organizações em todo o mundo têm aumentado, à medida que a concorrência cresce ferozmente. Apesar desse aumento, muitas organizações sentem que seus investimentos não lhes trazem o retorno esperado em termos de reais benefícios para o negócio.

Têm havido diversas tentativas para criar métodos para melhorar o sucesso dos investimentos das organizações na implementação de IS/IT e foram concebidas metodologias para esse fim, embora com modestas melhorias. Uma das principais metodologias é a metodologia de Gestão de Benefícios criada na Universidade de Cranfield, amplamente reconhecida como uma excelente metodologia, com resultados comprovados, muito embora a sua taxa de adoção não seja tão alta quanto seria expectável e desejável.

Este projeto de investigação examina a literatura publicada, procurando encontrar os motivos desse problema e, em seguida, recorrendo à metodologia Design Science Research, cria artefactos com o objetivo de ajudar a resolver alguns dos problemas conhecidos na adoção da metodologia de Gestão de Benefícios.

Os artefactos criados, conforme definido pela metodologia Design Science Research, foram depois avaliados num Estudo de Caso que decorreu num grande banco português.

Os resultados da avaliação indicam que os artefactos criados durante este projeto de investigação são úteis e ajudam à adoção da metodologia de Gestão de Benefícios criada na Universidade de Cranfield.

Palavras-Chave: Gestão de Benefícios; Sistemas de Informação; Tecnologias de Informação; Desenvolvimento Ágil; Gestão Ágil de Projetos.

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List of Abbreviations

BDM – Benefits Management Network

BMS – Benefits Management System

CRM – Customer Relationship Management

IS – Information Systems

IT – Information Technology

RDBMS – Relational Database Management System

UML – Unified Modelling Language

1. INTRODUCTION

Investments made by organizations, around the world, in information systems are, according to several authors, very significant and have been increasing. Despite this fact, many studies have shown that it is uncertain whether IT expenditure, in major organizations, has resulted in increased business value. (Caldeira, Serrano, Quaresma, Pedron, & Romão, 2012; Farbey, Land, & Targett, 1999; Hesselmann, Ahlemann, & Böhl, 2015; Serrano & Caldeira, 2002; Tippins & Sohi, 2003; Ward & Daniel, 2005).

There are currently several process models aiming to help the organizations attain the expected benefits from the implementation of information systems, but evidence has shown that the level of usage of some formal process of benefits management by organizations is about one third of the total IS/IT projects (Hallikainen et al., 2006; Lin & Pervan, 2003).

The purpose of this research project was to refine the Benefits Management Process model. Considering the low usage of formal process models to help organizations better realizing the business benefits in the implementation of information systems, the idea was to create ways to foster the adoption of a Benefits Management approach. To accomplish this objective, the researcher created two artefacts based on the literature review. These artefacts were subjected to a scrutiny analysis within a Focus Group composed of experts in the area of IS/IT Benefits Management. The experts provided a number of improvement suggestions for the artefacts, and the researcher implemented these improvements. Resorting to the Design Science Methodology applied to Information Systems Research, the final validation of the artefacts was performed in a Case Study in an IS/IT project within a Financial Institution, which led to the conclusion that the artefacts were indeed useful to potentiate an increased use of Benefits Management in IS/IT based projects.

The document is organized in 8 sections. The first section is this introduction. Section 2 contains the literature review, and then section 3 presents the philosophical perspective of the researcher and the research methodology. Section 4 describes the preliminary fieldwork performed to prepare the research project, anticipating the work to be done, which includes the preliminary definition of the artefacts created. One of the two

artefacts, the software tool, given its relevance within the present research project, is then described in section 5. The artefacts had to be evaluated and a case study took place to perform their evaluation. This case study is described in section 6. The next section, section 7, discusses the findings of the research project and finally section 8 presents the conclusions, limitations and potential for further research. The bibliographic references are in the end of the document.

2. LITERATURE REVIEW

2.1. Some definitions

The terms *Information* Technology (IT) and *Information* Systems (IS) are used frequently in the literature with slightly different meanings. In the scope of this thesis, we will use the term IS/IT, and its meaning is the combination of Information Systems, defined as the "*set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making in an organization*" (Laudon & Laudon, 2015, p. 47) and Information Technology Infrastructure, which is the "*shared technology resources that provide the platform for the firm's specific information system applications*" (Laudon & Laudon, 2015, p. 195).

Another term that will be widely used along this article is the term *benefit*, which will have the following definition: "an outcome whose nature and value are considered advantageous by an organisation, which are owned by individuals or groups who want to obtain value from an investment" (Yates, Sapountzis, Lou, & Kagioglou, 2009, p. 224).

The expression Benefits Management is, according to Peppard, Ward and Daniel (2007, p. 3), "*the process of organizing and managing so that the potential benefits from using IT are actually realized*". The authors emphasize the fact that benefits realization and change management are linked in the benefits management process, as benefits "*arise only from changes made by individual users or groups of users, and these changes must be identified and managed successfully*" (Peppard et al., 2007, p. 3).

2.2. IT doesn't deliver

In the information society, investments in Information and Communication Technologies are a significant part of most firm's investments, and organizations are becoming more and more aware that, in order to actually benefit from the implementation of information and communication technologies, they need to have a method that will help them realizing the expected benefits (Serrano & Caldeira, 2002).

Despite this fact, a 2004 report from the Standish Group CHAOS referenced by Han and Huang (2007, p. 42) indicates that "53% of software projects were unable to deliver on schedule, within budget, and with the required functions, while 18% of the

software projects were cancelled". Another study, published seven years later – 2011 – by the Standish Group, examines software projects conducted between 2002 and 2010, and reports that only 37% of the projects were reported as successful, while the others were either challenged (42%) or complete failures (21%) (Standish Group, 2011). More recently, in 2015, the Standish Group published a new CHAOS report with the analysis of more than 50 thousand IS/IT projects around the world, from 2011 until 2015 (Hastie & Wojewoda, 2015; Vachon, 2016). Once again, the results were consistent and not different from the previous results. Table 1 bellow shows these results of the Standish Group CHAOS report related to the years 2011 until 2015.

Table 1: Project Success Results

	2011	2012	2013	2014	2015
Successful:	29%	27%	31%	28%	29%
Challenged:	49%	56%	50%	55%	52%
Failed:	22%	17%	19%	17%	19%

Source: (Hastie & Wojewoda, 2015)

Another relevant reference to project failure is the following:

> *"Joe Harley, then-CIO at the Department of Work and Pensions for the UK government, stated that only 30% of technology-based projects and programs are a success — at a time when taxes are funding an annual budget of £14 billion (about $22 billion USD) on public sector IT, equivalent to building 7000 new primary schools or 75 hospitals a year"*
>
> (Serrador & Pinto, 2015, p. 1040)

Most IT projects fail to deliver in one or more of the following components: schedule, budget or requirements (Caldeira et al., 2012). Sauer, Southon and Dampney (1997) claim that information systems implementation failure is a problem yet to be solved, as the implementations have been persistently unsuccessful with failure rates not declining over the years. The authors also claim that the failures in information systems implementations have occurred even in organizations with high track records of success and the failures have been costly and severely damaging for the organizations.

Ward & Daniel (2012) state that the resources of the organization, like IS/IT, which include both technology and human resources, are combined with the other resources – working practices, culture – to make up the activities of the organization. Thus, improvements in these factors should lead to a better organizational performance although, as noted by the authors, this is not always the case. In fact, in most organizations, the information systems departments tend to be viewed as having poor performance and not delivering real value-for-money (Peppard et al., 2007).

Farbey, Land and Targett (1999) refer several studies to conclude that it is uncertain whether Information Technology expenditure in major organizations has resulted in increased business value. The authors claim that, although there have been a lot of pressure on IS/IT departments to reduce expenditure and account for the money spent, most organizations are unsatisfied with the evaluation procedures, which has led to incorrect selection of projects and consequently poor returns on the investments.

Tippins and Sohi (2003) also claim that, in spite of the fact that about half of all the companies in the world are increasing the spending of money in order to try to get a competitive advantage, there is no clear understanding about performance results and about how IT can influence the company's strategy. A significant number of companies still suffer from the so-called productivity paradox, i.e., although IS/IT has led to increased productivity, it has not brought with it any significant business profitability (Farbey et al., 1999). Different authors have been, for some time, claiming that, in the knowledge economy, although many companies have spent a lot of money in IS/IT, they do not perceive real benefits from that spending (Hesselmann et al., 2015; Tippins & Sohi, 2003).

According to some authors (Farbey et al., 1999; Ward & Daniel, 2005), the organizations' expectations on how IS/IT should help them meet the challenges of the changing competitive pressures, have been evolving during the last decades. Table 2 shows a characterization of those changing expectations from the 1960s up to the 1990s, time of the authors' analysis.

Table 2: The development of IS/IT support for business.

Decade	Market demands	Ideal firm	IT performance criteria	Technology base	IT applications
1960s	Price	The efficient firm	Efficiency	Mainframe – batch processing	Data processing / automation of routine tasks
1970s	Price, quality	The quality firm	Efficiency + quality	Mainframe – batch processing	Functional efficiency
1980s	Price, quality, choice/delivery time	The flexible firm	Efficiency + quality + flexibility	Personal computing	Personal productivity
1990s and beyond	Price, quality, choice/delivery time, uniqueness	The innovating firm	Efficiency + quality + flexibility + innovative ability	Networks	Organizational transformation

Source: Ward & Daniel (2005, p. 3)

As shown in Table 2, the emphasis has been shifting from the use of IS/IT mainly to reduce costs (by the automation of routine tasks) to using the systems also to improve the quality of operations and products, and thus improving the organization's own efficiency. The advent of personal computers and networks and their spreading to factories, warehouses and regional offices, brought the IT much closer to where the work was performed. This fact both enabled and encouraged an increased demand for flexibility (Ward & Daniel, 2005).

The introduction of a new IT system in organizations often causes situations of resistance to change. These systems are often not only technological artefacts, they also involve changes in the way people do their daily work and, sometimes, even in the established power relations and interests in the organization (Caldeira et al., 2012). Frequently, the unsuccessful cases of information systems implementations are covered up by management in order to protect the organizational image (Serrano & Caldeira, 2002). According to Peppard, Ward and Daniel (2007), this is partly explained by the fact that, when implementing information systems, the success is mainly measured in terms of Return-on-investment (ROI). This fact tends to lead managers to manipulate the denominator by reducing the investment, and paying less attention to the numerator, which is the primary reason for the implementation of the system – to generate real benefits for the organization. Peppard, Ward and Daniel (2007, p. 1) also state that, in order to get the projects approved, the expected benefits are often overstated in pre-project

appraisals that the authors call "*a ritual that must be overcome before a project can begin*".

Peppard, Ward and Daniel (2007) refer another important reason for the generalized perception that IT departments do not deliver real value-for-money. According to these authors, organizations aim to maximize the potential benefits of the implementation of the system, yet they focus mainly on the deployment of the technology. They fail to realize and plan the changes in the working processes that individuals and groups must undergo to be able to realize those benefits.

Farbey, Land and Targett (1999) argue that, although there has been pressure on IT departments to cut costs, organizations generally are not satisfied with the ways that IT projects are evaluated. This fact leads to incorrect choices of the projects to be implemented and consequently poor investment returns and dissatisfaction from the users.

A lot of projects are simply classified as "strategic" thus avoiding having to define objective mechanisms to evaluate their impact in the organization (Serrano & Caldeira, 2002). According to Strassmann (1997), researchers at the MIT, have concluded that the expenditures in IT have lower rates of success in improving productivity than any other types of expenditures considered.

2.3. Wrong measures of success in systems implementation

The very concept of success in the implementation of information systems is not straightforward, as it can be measured in different ways (Caldeira & Ward, 2003). According to Peppard, Ward and Daniel (2007), the success in the implementation of information systems is often measured in terms of delivery time, money spent and the meeting of technical specifications. The real business benefits are believed to appear automatically once the project is in place.

Farbey, Land and Targett (1999, p. 190) also criticize the imprecise use of the term "*IT Evaluation*", as they claim it is sometimes wrongly used simply to define "an event taking place at the commencement of a project in order to decide whether the project should go ahead".

Frequently, the decision-makers tend to justify the investments in IS/IT implementations on doubtful criteria, based on their self-believed experience or on very simplistic indicators and, almost always, on their personal believe that the investments will inevitably pay off (Serrano & Caldeira, 2002).

There is sometimes a phenomenon by which the potential benefits of a proposed project are inflated in order to ensure they are approved (Breese, 2012). Many information systems investments have been decided without proper attention to formal evaluation, instead being defended as "*acts of faith*", or "*got to do*" or "*strategic*". Even when there were formal evaluation processes, they were simply accounting based techniques (Farbey et al., 1999). The acts of project evaluation tended to be viewed as organizational impositions that took up valuable working time and not as positive activities leading to better decisions and tighter control, more satisfied users and greater organizational benefits. Research shows that organizations use few of the evaluation techniques available in the literature and favour accounting-based methods (Farbey et al., 1999).

The evaluation of projects based solely on financial methods (e.g. ROI or Capital Budgeting), although appropriate for investment decisions concerning manufacturing equipment, are not adequate for the evaluation of IS/IT investment projects, that have a portfolio of benefits which often include significant intangible and non-financial benefits (Irani & Love, 2002). Even when a project delivers in terms of duration (time), money spent (budget) and delivery quality, it is not necessarily a successful project, as exemplified by the Motorola Iridium satellite project, which was made redundant by rapid developments in terrestrial cell phone networks (Collyer, Warren, Hemsley, & Stevens, 2010; Serrador & Pinto, 2015).

> *There are many situations where a strong business case has been made for an investment together with a well-considered ROI calculation, yet the business benefits sought never actually materialized, despite the fact that the project was delivered on time, within budget, and met the technical specification* (Peppard & Ward, 2005, p. 53)

The realization of benefits from the investments in IS/IT is, in most cases, dependent on the organization actually implementing changes in the ways individuals and groups work and interact within the organization, but these changes are often overlooked, underestimated and have not the necessary resources allocated to them (Ward & Daniel, 2005).

On the other way, as stated by Caldeira et al. (2012), the assessment of the business benefits from the implementation of an information system should not be done in a single one time phase before the project begins, as some of the benefits may not be attained immediately after project completion. They may instead be realized only after a while, when the working processes and routines have been altered and the system has been completely integrated and assimilated by its users.

Breese (2012) refers a study conducted in 2009 in the United Kingdom, by the Benefits Management Specific Interest Group (SIG) created within the Association of Project Management, which found that 60% of the respondents described their organization's approach to Benefits Management as "*informal*" or "*accidental*". According to Breese (2012), the Benefits Management SIG of the Association of Project Management has a vision to "*develop and promote benefits management as a core driver of successful project, programme portfolio and change management*" (Breese, 2012, p. 343).

Serrano and Caldeira (2002) claim that the problem of identifying the benefits from the implementation of IS/IT becomes complex when trying to assess all the benefits from a financial point of view. To correctly evaluate a system's implementation project, although the costs may have been correctly calculated, it is essential that the potential benefits be also evaluated. As it is difficult to evaluate these benefits, mainly the intangible ones, it is essential that companies introduce an effective Benefits Management process for their investments in Information Systems (Serrano & Caldeira, 2002).

From the aforementioned, it can be inferred that many organizations should improve the way they measure the success on the implementation of IS/IT.

2.4. New ways to measure project success

Several researchers in the academia have proposed different approaches and models to help organizations manage the realization of benefits when implementing information systems. Yates et al. (2009) compiled a list of these approaches. This list is presented in Table 3.

Table 3: List of process models for Benefits Management.

Approach	Model Details
Active Benefits Management (Leyton, 1995)	Sets the benefits management activity in the context of business change. Identifies continuous flow between change and benefits
The Cranfield process model of Benefits Management (Ward et al., 1996)	Key feature of this model is benefits monitoring. This compares project results with the benefits realisation plan during the project and assesses if any internal or external changes have occurred that will affect the delivery of planned benefits. Potential benefits are identified, a plan is devised for their realisation, the plan is executed, the results reviewed and evaluated and feedback occurs.
The Benefits Realisation Approach (BRA) (Thorp, 1998)	Is based on two cornerstones: (1) The shift from stand alone project management to: Business Programme Management, Disciplined Portfolio Management, Full cycle governance. (2) The three necessary conditions for the successful implementation of the BRA are Accountability of activists, Relevant measure as in measuring the things that really count and Proactive management of change to give people ownership stakes in programs.
Active Benefit Realisation (ABR) (Remenyi and Sherwood-Smith, 1998)	A process for managing information systems development through a continuous evaluation approach. ABR requires a direct and continuous focus on business benefits realisation and is based on a contingency philosophy, this is that information system outcomes development activities, tasks and participating roles of the stakeholders are dynamic throughout the duration of the project principle stakeholders of the information system are identified at the onset and that they accept and agree their continuous involvement.
Towards best practice to Benefits Management (Ashurst and Doherty, 2003)	In this approach benefits realisation is a continuous process through an evolving organisational context. But it does not take into account influences that external factors may have onto a project
Managing Successful programmes (MSP) (OGC 2007)	MSP represents the UK Government's view on the programme management principles and techniques MSP identifies benefits management as ''a core activity and a continuous 'thread' throughout the programme'' (OGC, 2007a), and fundamental to the realisation of benefits from new capabilities delivered by projects within the programme. Emphasis is placed on identification, quantification, assignment of owners and tracking, it has been heavily influenced by Cranfield's Benefits Management model and Bradley's Benefits Realisation Management 2006.

Approach	Model Details
The Gateway^{tm} Process	The Gateway Review Process indicates, at a high level, dependencies between a typical Benefits Management process and the steps for managing a major delivery programme. It also maps the main benefits management steps onto the standard delivery stages described in both MSP and OGC Gateway Reviews, but the approach can be used for any type of more specialised change initiative. This process contains identification of potential benefits their planning, modelling and tracking, the assignment of responsibilities and authorities and their actual realisation.
Benefits Management in the Handbook of Programme Management (Reiss et al., 2006)	This approach focuses the benefits management model in the delivery of benefits by projects (Nogeste and Walker, 2005). Reiss (2006) define the scope of benefits management as "the management and monitoring of benefits during and after execution phase' and depicts the "value path" relationship between benefits and projects as a Hierarchical Benefits structure (Nogeste and Walker, 2005)

Source: Yates et al. (2009, p. 255)**. Reproduced as-is, with references from the original author.**

Table 3 shows a few process models for benefits management although, according to Yates et al. (2009), some of them act only as evaluations to be performed at the end of a project.

Each of the benefits management process models, uses a set of technics to evaluate the IS/IT expected benefits and several authors have prescribed sets of different appraisal technics. Irani and Love (2002, p. 79) present a diagram with an interesting taxonomy of investment appraisal technics, including references to the authors that describe those technics. The diagram is reproduced in Figure 1 *as-is*, i.e., the references presented are the ones that the authors included in the original document.

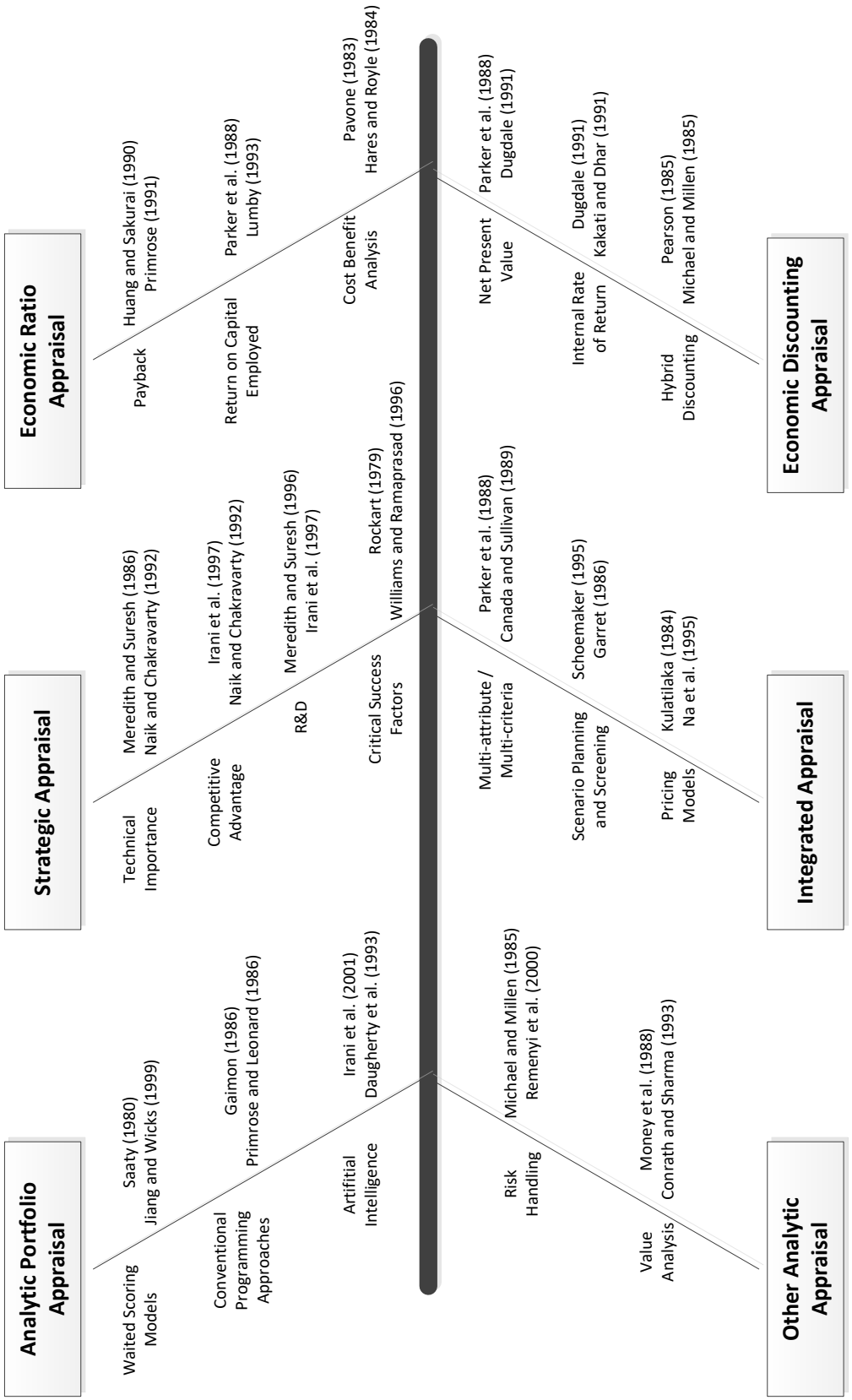


Figure 1: Taxonomy of investment appraisal techniques

Source: Irani & Love (2002, p. 79)**. Reproduced as-is, with references from the original authors.**

Although, as shown above, there are a number of different techniques for evaluating projects, the best way to measure the success in the implementation of information systems is, according to DeLone and McLean (DeLone & McLean, 1992), the user satisfaction or user information satisfaction. These concepts have "*a high degree of face validity*" because "*it is hard to deny the success of a system which its users say they like*" (DeLone & McLean, 1992),

Caldeira and Ward (2003) also state that "*the usefulness of user information satisfaction is higher when compared to the conceptual weaknesses of most other potential measures of IS/IT success*" (Caldeira & Ward, 2003, p. 132)

Organizations achieve real benefits with the implementation of an IS/IT system when that implementation allows them to improve their performance (Ward & Daniel, 2005). An IS/IT system is as successful as it is actually and effectively used. In this article, we will consider user satisfaction as defined by Ives, Olson and Baroudi (1983, p. 785), i.e., "*the extent to which users believe the information system available to them meets their information requirements*".

Peppard, Ward and Daniel (2007), based on a previous work by Ward, Taylor and Bond (1996), proposed an approach and a set of tools to improve the delivery of business benefits in the implementation of IS/IT. This new approach is based on five principles supported by two general features: a clear identification of the expected benefits and a detailed plan for realizing them.

The five principles defined by Peppard, Ward and Daniel (2007) are resumed in Table 4 below.

Table 4: Five Principles for Realizing Benefits through IT.

#1	IT has no inherent value	Technology per se does not bring business value to the organization, only its effective use.
#2	Benefits Arise When IT Enables People to Do things Differently	The organizations realize the benefits when individuals or groups improve the way they do things, either internally (employees) or externally (customers, suppliers)
#3	Only Business Managers and Users Can Release Business Benefits	As benefits result from improvements in the way people work, only the business users and customers or suppliers can be accountable for delivering those benefits, not the IT department or the project team

#4	All IT Projects Have Outcomes, But Not All Outcomes Are Benefits	Often, IT projects also have negative impacts on the organization, along with the benefits. The challenge to management is to make sure the benefits surpass the negative impacts
#5	Benefits Must Be Actively Managed to Be Obtained.	The benefits do not occur automatically and possibly not immediately, so managing the benefits does not stop with the delivery of the technical implementation. It has to continue until either the expected benefits are realized or It is clear that they will not be.

Source: (Peppard et al., 2007)

The benefits realization plan is the set of changes that have to be implemented in order to realize the expected benefits, along with the time and resources necessary to implement those changes (Caldeira et al., 2012).

The process of Benefits Management has five main phases: Identify and structure benefits; Plan benefits realization; Execute benefits plan; Review and evaluate results; Potential for further benefits. The diagram in Figure 2, from Ward and Daniel (2005) shows a graphical view of the process.

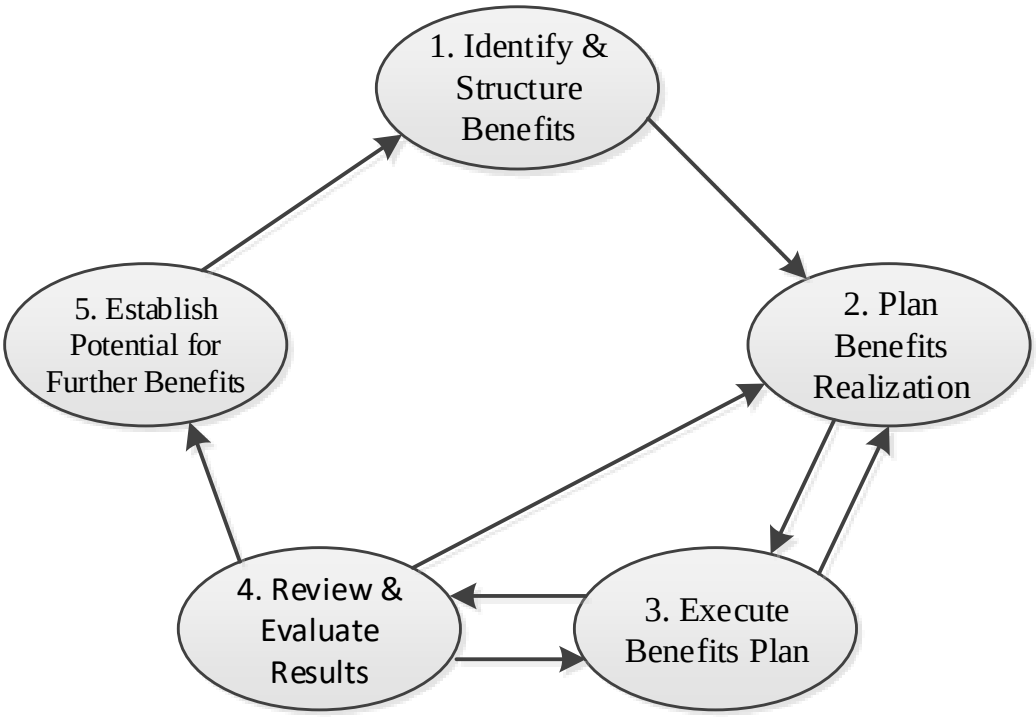


Figure 2: The Benefits Management Process.
Source: (Ward & Daniel, 2012, p. 69)

This process model has a certain resemblance to the waterfall model of software development, as described in (Boehm, 1976). This model, which has been inspired in the industrial processes and is presented in Figure 3, was the first real software development model, bringing some discipline to the previous ad-hoc development practices. It is a very rigid and disciplined model, with very well-defined phases, tasks and deliverables.

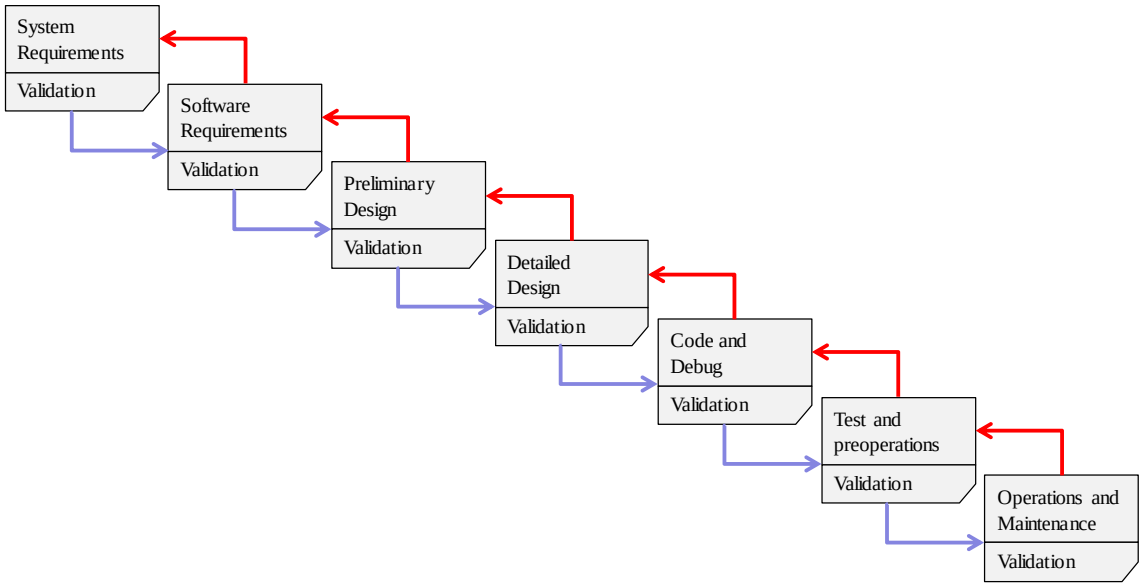


Figure 3: The waterfall model for software development
Source: adapted from (Boehm, 1976)

The similarities between the process models for Benefits Management Realization from Ward and Daniel (2005) and the Waterfal Model for software development presented by Boehm (1976) can be visualized if the former is flatened as in Figure 4 below:

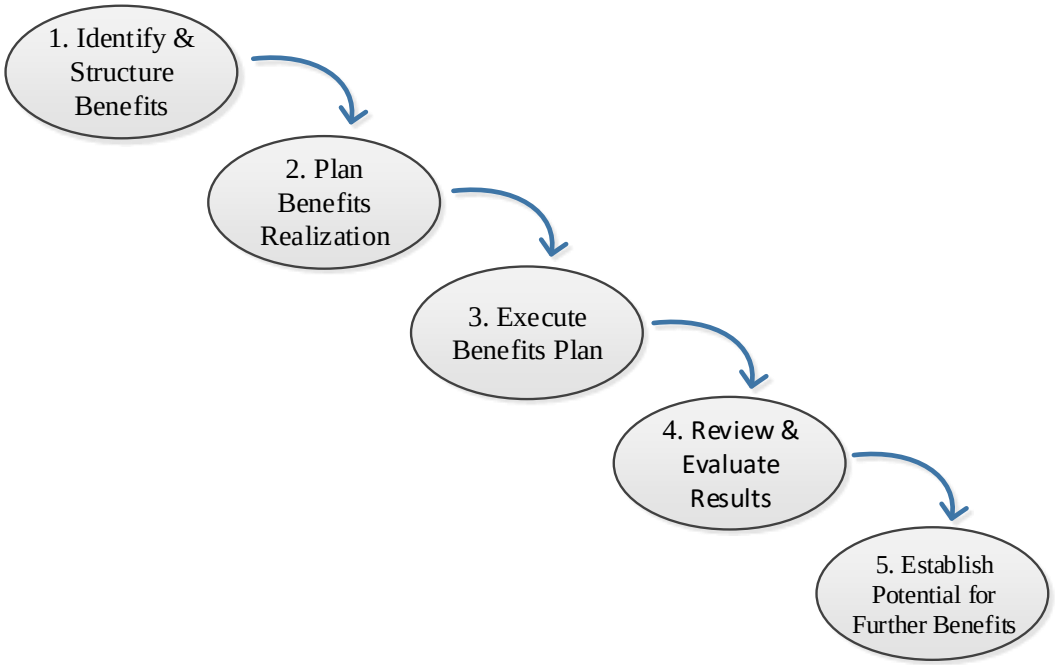


Figure 4: The Benefits Management Process, in a waterfall model
Source: The author

The waterfall process model for software development has been known to present several problems and difficulties in the implementation in practice, as it will be described later on, in paragraph number 2.7.

Peppard, Ward and Daniel (2007) present a set of questions that need to be answered to start building a benefits realization plan in order to help organizations build and support the business case. These questions are presented in Table 5.

Table 5: Questions to be answered before building a benefits realization plan.

#	Question	Argument
1.	Why must we improve?	This is the first question to be answered before starting an IS/IT project, the reason behind the project itself.
2.	What improvements are necessary or possible?	The key stakeholders of the organization must agree to the improvements that will be considered for the project, and these will constitute the objectives of the investment.

#	Question	Argument
3.	What benefits will be realized by each stakeholder if the investment objectives are achieved?	Definition of how each of the benefits will be assessed in its achievement.
4.	Who owns each benefit and will be accountable for its delivery?	Each benefit must have an owner within the organization, who will be responsible for the value assigned to that benefit. When listing the potential benefits of an information system, it is important, for each benefit, to define its owner inside the organization, i.e., the person responsible for the realization of that particular benefit. Also important is to define the way by which it will be determined whether that benefit was really achieved
5.	What changes are needed to achieve each benefit?	It is very important that the project team define specific and explicit links between each benefit and the set of organizational changes that must be implemented in order to fully realize it.
6.	Who will be responsible for ensuring that each change is successfully made?	It is crucial that, for each organizational change, there is a specific stakeholder accountable for its effective implementation.
7.	How and when can the identified changes be made?	For question number 7 to be answered, the organization must assess each stakeholder group's ability to perform the identified changes.

Source: Adapted from: (Peppard et al., 2007)

The Benefits Dependency Network is a core tool to construct a benefits realization plan and also to help on the follow-up of the realization of that plan during and after the project implementation (Caldeira et al., 2012; Peppard et al., 2007; Ward & Daniel, 2005). This tool addresses the seven questions defined by Peppard et al. (2007). Figure 5 below shows the definition model of the Benefits Dependency Network.

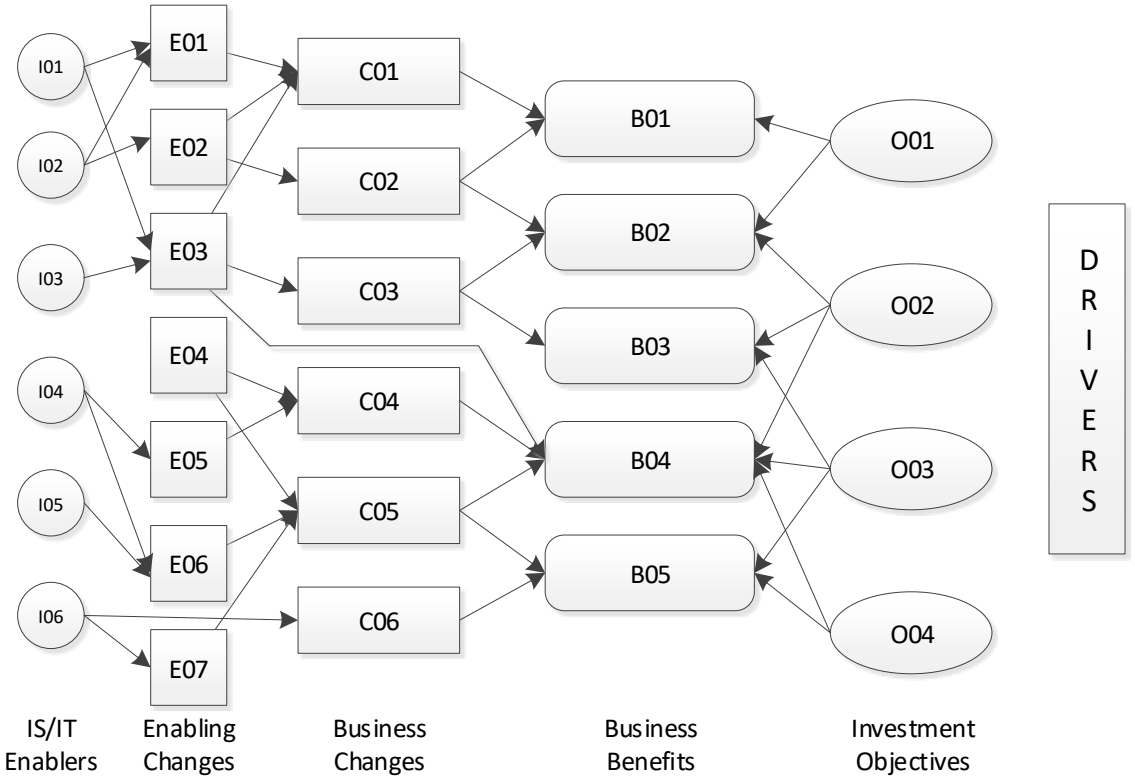


Figure 5: The Benefits Dependency Network.
Source: Adapted from (Ward & Daniel, 2005, p. 134)

According to Ward and Daniel (2005), the Benefits Dependency Network should be created from the right to the left. The first thing to do to build the Benefits Dependency Network is to understand the drivers acting on the organization, then agree on the investment objectives (coded O01, O02, …), then identify the business benefits (coded B01, B02, …) that will result from the achievement of the investment objectives. The next step is to identify the changes to the ways individuals and groups work necessary to realize the identified potential benefits. There are two types of changes that must be identified for each of the benefits: Business Changes (coded C01, C02, C03, …) and Enabling Changes (coded E01, E02, E03, …). Business changes are the permanent changes that must be implemented in the way people work in the organization, so that the benefits are sustainably realized. On the other way, the enabling changes are the ones that need to be done only once to implement the system (for example, migrate the data from the old to the new system, or buy new hardware). Some authors, like Caldeira et al. (2012), define the Business changes as "Organizational Changes" and the Enabling Changes as "Change Factors". Finally, the IS/IT enablers (coded I01, I02, I03, …) are the

technology implementations that will support the new or changed working processes, and finally allow the organization to attain the desired business benefits.

In some complex cases, where there are a lot of benefits, changes and complex dependencies, Ward and Daniel (2005) advises to group or organize the benefits and their associated changes into sets of related benefits and their required changes, in what the authors call Benefit Streams.

A Benefits Dependency Network, as the one defined in the Cranfield Process Model of Benefits Management is a fundamental tool to help construct a benefits realization plan and to help in the follow-up of that plan (Ward et al., 1996). In spite of the fact that the benefits management process brings an added cost to the project, this cost is fully justified to ensure that the resulting information system have the expected return (Serrano & Caldeira, 2002). This process has proved, in practice, to actually keep up with the necessary organizational changes and realize the full benefits of the information systems implementation projects (Caldeira et al., 2012).

> *"The main differences between the benefits management approach to developing the value side of the equation, compared with more traditional approaches, are the continued emphasis on the relationship between change and benefit, the importance of benefit ownership and the need to be explicit about benefit measurement"* (Ward & Daniel, 2012, p. 129)

2.5. Building the Benefits Dependency Network (BDN)

The process of building the Benefits Dependency Network, the central point of the Cranfield Benefits Management Process, is described in paragraph 2.4 above, specifically by the model of Figure 2. Peppard, Ward and Daniel (2007) distinguish between two different types of projects (which they prefer to call interventions) that lead to alternative ways of building the BDN. The two distinct types are problem-based and innovation-based. The authors consider that an intervention can be either problem-based or innovation-based or, in some large projects, can have both components. The authors explain the differences by explaining the "*ends-ways-means*" of projects, which they define the following way:

> *"We define ends as the target improvements, ways as how the business needs to change, and means as the enabling IT capabilities"* (Peppard et al., 2007, p. 4).

Problem-based interventions are ends-driven. They aim to solve a business problem, like overcoming a disadvantage against competitors, preventing performance from deteriorating, achieving business targets or removing performance constraints. On the other hand, innovation-based interventions are the ones in which the organization is trying, through a new IT investment (means), to exploit new business opportunities or develop new capabilities (ways), such as using IT to do something new or in a new way (Peppard et al., 2007).

In the first type of intervention, problem-based, the benefits the organization is trying to attain tend to be easier to define and clarify, as they are the ends the organization aims to attain. On the other hand, in innovation-based interventions, the benefits that will be obtained might not be so clear, as the organization will be trying to discover new ways of exploiting technology (new means) to do different things or do things differently (new ways) (Peppard et al., 2007).

For a problem-based intervention, which is by nature ends-driven, the way to build the Benefits Dependency Network (BDN), which is the main component of the benefits realization plan, should normally follow the general plan presented in Figure 6.

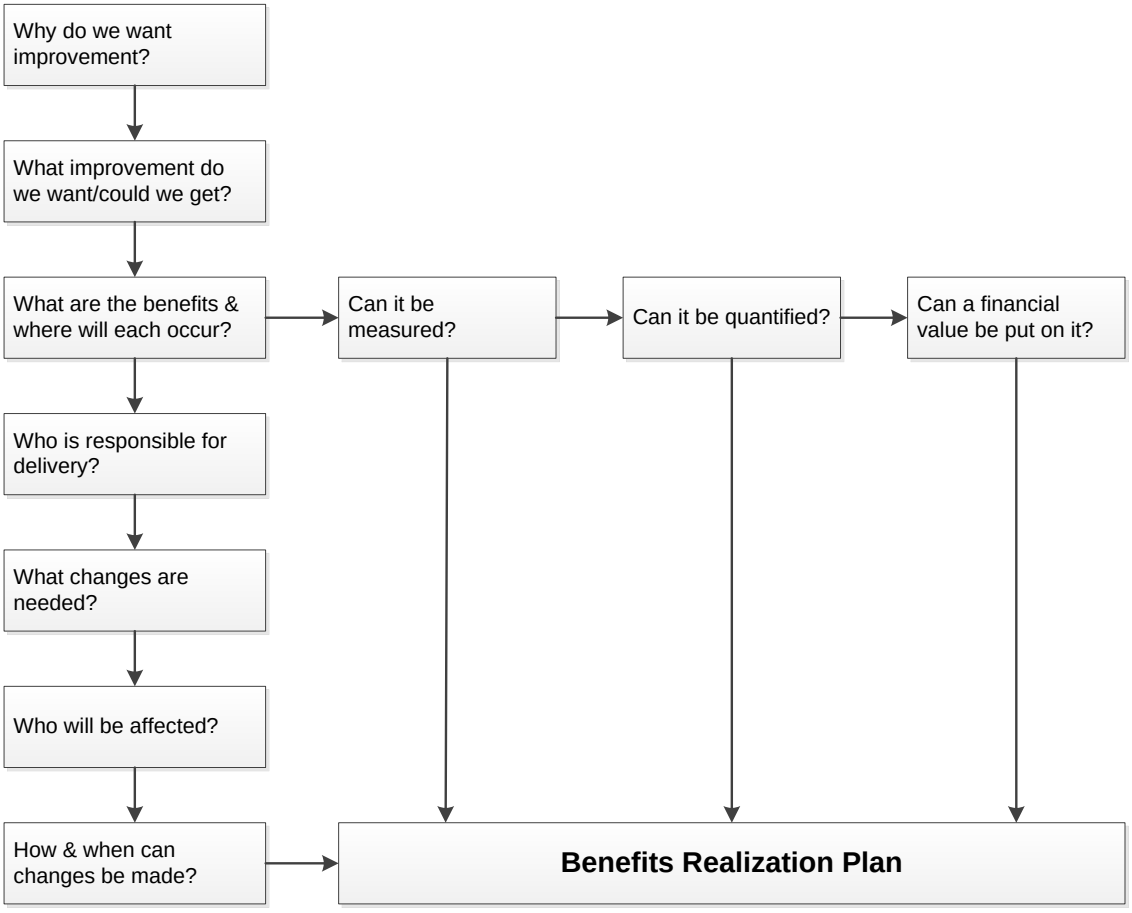


Figure 6: General process for building a benefits realization plan
Source: (Ward & Daniel, 2012, p. 76)

The process of creating the plan for the realization of business benefits shown in Figure 6 above starts by answering the question "*why do we need to improve*", which leads to the definition of the drivers for the investment. The second question on the process is the definition of the investment objectives and the allocation of the ownership of each proposed benefit, then the business changes and the stakeholders that will be affected by the changes, followed by the enablers of those changes. This process defines the right-to-left construction of the Benefits Dependency Network (BDN), which is the main artefact that constitutes the output of the benefits realization plan, as defined by the authors (Peppard et al., 2007; Ward & Daniel, 2012).

For the other type of projects, the innovation-based interventions, this process of creating the Benefits Dependency Network is not easy to implement, as they are, by nature, not ends driven but means or ways driven. According to the authors, for these type of interventions, the benefits that will be delivered by the changes are not clear *a priori*.

The most efficient way to gather the information to build the Benefits Dependency Network defined in the process of Figure 6 is by conducting, at least, two workshops (Ward & Daniel, 2012). The workshops should involve the key stakeholders, "*in order to agree the investment objectives, elicit the benefits, define the scope of the change programme and understand the risks*" (Ward & Daniel, 2012, p. 205). After the workshops, the authors state that there should be a complete business case and business plan with completed benefits and change templates for all the activities of the intervention, having all of the steps of stages one and two of the Benefits Management process shown in Figure 2 above.

2.6. Actual use of a Benefits Management process

As referred in the previous sections, there are several methods and processes to manage IS/IT projects in such a way that it will help to realize the expected business benefits. The question remains as to whether these methods are actually being used in the field by the practitioners. Ashurst, Doherty and Peppard (2008) clearly state that they are not. In fact, they assert that "*there is little evidence that organizations have been able to translate these academic prescriptions into effective working practices*" (Ashurst et al., 2008). Every year, billions of dollars are spent by organizations on management training and consultancy, but this is often ineffective in changing the way practitioners manage organizational change (Pfeffer & Sutton, 1999). The problem, as those authors bluntly state, is not *knowing*, it is *doing it*.

Lin and Pervan (2003) state that the most difficult thing in the evaluation of an IS/IT project implementation is the identification and measurement of the business benefits, for the reasons presented in Table 6 below. These authors conducted an empirical study about the IS/IT investment evaluation and benefits management processes in the largest 500 organizations per gross revenue in Australia, for which they obtained a response rate of 13.8%. From this study, they concluded that "*…only about one-third of organizations claimed to have a formal benefits realization methodology*" (Lin & Pervan, 2003, p. 23). Other authors state that "*due to the additional reporting and organizational change efforts that BM requires from its affected stakeholders, achieving a sufficient degree of acceptance is rather demanding*" (Hesselmann et al., 2015, p. 586).

Table 6: Reasons for failure to monitor benefits of IS/IT

1	It is difficult to assess benefits after a project has been implemented.
2	It is not necessary as the project was implemented according to plan
3	It is too costly to undertake the proper post-implementation reviews on benefits
4	Many organizations tend to give very little attention to the intangible benefits when decisions are made
5	Many organizations have poor IS/IT adoption practices
6	It is against many organizations' culture to act as both the watchdog and implementer for benefits delivery

Source: (Lin & Pervan, 2003, p. 14)

Another study conducted in 2005 in three European Countries (Sweden, Norway and Finland) surveyed 427 organizations to study the IS/IT investment evaluation processes. This study concluded that more than half of the organizations base their IS/IT investment decisions on experience and manager decision and only about one third of the IS/IT projects are subject to a formal evaluation process (Hallikainen et al., 2006).

The percentage of usage of some sort of formal evaluation process in IS/IT projects is consistent in both independent studies, one conducted with Australian companies (Lin & Pervan, 2003) and the other in three European Countries (Hallikainen et al., 2006). Thus, it is acceptable to assume that the level of usage of formal evaluation processes in the implementation of IS/IT systems should be roughly similar to about one third or, at least, in all likelihood far below one-half of the projects.

The reasons for the low usage of formal evaluation processes are yet to be explained, although some studies have been presented on the subject. Those studies point to causes like the additional reporting and organizational change required, which affects an important group of stakeholders – the employees – thus reducing their acceptance rates (Hesselmann et al., 2015). It is also easily understandable that, usually, a problem-based intervention is easier to manage than an innovation based intervention, as it is easier to measure the success of the intervention. The benefits can be more limited but they are probably visible immediately after implementation, whereas in innovation-based interventions they tend to appear much later. Peppard and Ward (2005) state that the

"*ability to measure the benefits may reduce the goals to those that can easily be identified, agreed on, and quantified. However, such a compromise may well lead to overall disappointment since the benefits achieved by problem removal rarely justify the expense of an ES"* (Enterprise System) (Peppard & Ward, 2005, p. 59). Although the exact origins are unknown, Harvard Business School uses a framework in its discussions and teaching within the Technology areas, they call "*Competes versus Qualifiers*". They classify as Qualifier an investment that only enables the company to get to the starting line of the race, whilst Compete is an investment that will give the company a potential edge over its competitors. Qualifiers are needed just to run the race, but they will not be enough to win it. Thus, problem-based interventions are actually qualifier investment, but to gain advantage over the competitors, companies will need innovation-based interventions.

In this work, we aim to suggest some of the possible reasons for the low usage of formal processes of Benefits Management in IS/IT projects and to propose ways to help practitioners increase that usage. This work will focus on one of the Benefits Management process models, namely the Cranfield process model of Benefits Management, initially proposed by Ward, Taylor and Bond (1996) and further developed and enhanced by Peppard, Ward and Daniel (2007).

2.7. The Agile Framework

From a long time, as early as in 1980s, researchers have been noticing that the software development methods and processes were becoming inadequate for the increasingly fast changing world of business. Takeuchi and Nonaka (1986) state the following:

> *In today's fast-paced, fiercely competitive world of commercial new product development, speed and flexibility are essential. Companies are increasingly realizing that the old, sequential approach to developing new products simply won't get the job done* (Takeuchi & Nonaka, 1986, p. 137)

The authors continue by claiming that a new rugby-like approach to product development, in which the team progresses by "*passing the ball back and forth*" between the players, going forward as a whole, is more appropriate. They compare the waterfall model to a relay race, in which each player does his/her part of the work and passes the token to the next one.

In a paper published in 1996, Barry Boehm, a prominent author on software development methodologies, points out that, as the waterfall model was gaining acceptance among companies, government organizations and standardization groups, there were evidences that those milestones did not fit an increasing number of situations (Boehm, 1996). This is in spite of its set of well-defined milestones for planning, organization, monitoring and controlling of the projects. One of the problems frequently found was with the excessively detailed requirements document, completely written upfront in the project, for which the author pointed-out three problems:

> *"A prototype is worth 100,000 words. Written requirements specifications trying to describe the look and feel of a user interface were nowhere near as effective as a user interface prototype.*
>
> *Gold plating. Fixed requirements specifications in advance of design tended to encourage software gold-plating. Users asked about their requirements would frequently reason, "I don't know if I'll need this feature or not, but I might as well specify it just in case."*
>
> *Inflexible point-solutions. Fixed requirements specifications tended to produce point solutions optimized around the original problem statement. These solutions were frequently difficult to modify or to scale up to increased workload levels."* (Boehm, 1996, p. 74)

Some references to incremental approaches to software development started to appear in the literature as early as the 1980s. One example is in (Fischer & Schneider, 1984), where the incremental development is advocated, in opposition to the waterfall sequential approaches. The paper specifically affirms that "*a large number of problems to be solved with the help of computer systems are ill-structured. Their solution requires incremental design processes, because complete and stable specifications are not available*" (Fischer & Schneider, 1984, p. 358)

In February 2001, a group of 17 software development gurus met at a ski resort called Snowbird in the mountains of Utah, in the USA, to reach a common agreement of what became the Agile Framework for software development. They later formed the Agile Alliance and wrote the Manifesto for Agile Software Development. The Agile Manifesto published in the official site of the Agile Alliance (www.agilealliance.org) states the following:

> *"We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:*

Individuals and interactions *over processes and tools*

Working software *over comprehensive documentation*

Customer collaboration *over contract negotiation*

Responding to change *over following a plan*

That is, while there is value in the items on the right, we value the items on the left more"

Source: https://www.agilealliance.org/agile101/the-agile-manifesto/ accessed in April 24th, 2017

The proponents of the Agile methods did not want to diminish the importance of the elements on the right, but to emphasize that fact the elements on the left are by far more important in any given project:

- Although they recognize the importance of having processes and tools to implement any project, one cannot do without the active participation of the individuals interacting among each other.
- Yes there is the need to create documentation, but having the software working and being used is far more important.
- There is no project without the negotiation and signing of a contract, but if a problem arises, once the contenders have to solve differences over the contract fine print, then everybody is losing already.
- Finally, a plan is obviously important to manage any project, but, as Field Marshal Helmuth Graf von Moltke[1] would say, "*Planning is everything. Plans are nothing*" (Cohn, 2005, p. 3), so an immediate and accurate response to change is a critical success factor.

Along with the four values published in the official site of Agile Alliance, the signers of the Agile Manifesto also state 12 principles that any software development methodology must obey to be considered an Agile Software Development Methodology. The 12 principles are the following:

[1] The chief of staff of the Prussian Army, 1800-1891

- *Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.*
- *Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.*
- *Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.*
- *Business people and developers must work together daily throughout the project.*
- *Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.*
- *The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.*
- *Working software is the primary measure of progress.*
- *Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.*
- *Continuous attention to technical excellence and good design enhances agility.*
- *Simplicity--the art of maximizing the amount of work not done--is essential.*
- *The best architectures, requirements, and designs emerge from self-organizing teams.*
- *At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.*

Source: https://www.agilealliance.org/agile101/the-agile-manifesto/ accessed in April 24th, 2017

The main differences between the Agile models and the traditional waterfall and its derivative models can be viewed in the following table:

Table 7: Main differences between agile and traditional models

	Traditional	Agile
Fundamental Assumptions	Systems are fully specifiable, predictable, and can be built through meticulous and extensive planning.	High-quality, adaptive software can be developed by small teams using the principles of continuous design improvement and testing based on rapid feedback and change.
Control	Process centric	People centric
Management Style	Command-and-control	Leadership-and-collaboration
Knowledge Management	Explicit	Tacit
Role Assignment	Individual – favours specialization	Self-organizing teams—encourages role interchangeability
Communication	Formal	Informal
Customer's Role	Important	Critical
Project Cycle	Guided by tasks or activities	Guided by product features
Development Model	Life cycle model (Waterfall, Spiral, or some variation)	The evolutionary-delivery model
Desired Organizational Form/Structure	Mechanistic (bureaucratic with high formalization)	Organic (flexible and participative encouraging cooperative social action)
Technology	No restriction	Favours object-oriented technology

Source: (Nerur, Mahapatra, & Mangalaraj, 2005, p. 75)

Linking the ideas of the Agile software development to other forms of agile thinking is not new. Poppendieck and Poppendieck (2003) claim that one of the Agile Software development methods – Lean Software Development – has its origins in the Toyota Production System, implemented by Taiichi Ohno in car manufacturing in the late 1940's. According to the aforementioned authors, the American car maker General Motors tried to avoid the high costs of making changes to vehicles during final production by "making the right decisions in the first place", which led to very inflexible and heavy upfront design processes. The Japanese car makers Toyota on Honda, on the other hand, had a different view on avoiding the high costs of wrong design decisions: "*don't make*

irreversible decisions in the first place; delay design decisions as long as possible, and when they are made, make them with the best available information to make them correctly." (Poppendieck & Poppendieck, 2003, p. 11).

The Agile Model has been successfully applied also in project management practices, to solve the problems that arise from overly tight controls. In fact, the term "*agile project management*" has since 2011 overcome the term "*agile software development*" on Goole Trends (Stettina & Hörz, 2015). Traditional project management techniques tend to focus on controlling the change the risk and the people through methodologies, tools and practices, though they fail "*when neat linear tasks don't easily accommodate dynamic processes and when neat schedules require frequent updating to reflect changing circumstances*" (Augustine, Payne, Sencindiver, & Woodcock, 2005, p. 87). Other authors also point out that the more complex the systems become, more it becomes ungovernable by a central set of strict rules, working better in an environment where each agent is able to self-organize and is empowered and trusted to take the best decisions under an appropriate set of well-defined rules (Schwaber, 2004). This author claims that the more complex the system, the more difficult it is to make it work with a centralized control system.

Different authors have studied the Agile construct in project management to agree on a definition of what it means to be Agile. An extensive study was conducted to propose a definition using a methodological approach named frame semantics adapted from the area of linguistics (Conforto, Amaral, da Silva, Di Felippo, & Kamikawachi, 2016). The conclusion of the study was that "*the agility performance might be affected by a combination of ability to change the project plan and active customer involvement*" (Conforto et al., 2016, p. 671).

Agile planning, as agile development itself, does encompass great discipline. It should not be confused with unplanned and undisciplined hacking, as it actually involves a lot of planning, although the agile model shifts the emphasis from the plan itself and the resulting documentation to the act and process of planning. (Boehm, 2002; Cohn, 2005). B. Boehm wrote that "*although hard-core hackers can use agile principles to claim that the work they do is Agile, in general these methods have criteria*" (Boehm, 2002, p. 64).

2.8. The Scrum Agile Method

The first time the term "scrum" has appeared in the literature was in (Takeuchi & Nonaka, 1986) and is often considered the inspiration for the scrum method. Authors have also described the development of *Borland Quattro Pro for Windows* as a project that followed a process that resembles an Agile Scrum method (Boehm, 2002; Schwaber, 1997).

Scrum is defined by the Scrum Alliance as "*an Agile framework for completing complex projects*"[2]. The defining difference from Scrum to other software development frameworks is that "*the SCRUM approach assumes that the analysis, design, and development processes in the Sprint phase are unpredictable. A control mechanism is used to manage the unpredictability and control the risk.*" (Schwaber, 1997, p. 10). Scrum does not prescribe any software engineering practice, as it is a framework essentially applied to the project management and that is the reason it has been chosen among the different Agile methods for this research project. The basic defining characteristics of scrum are the following:

1. Scrum is based on the premise that complex activities, such as software development, are impossible to fully predict. Change, therefore, is unavoidable and must be dealt with.
2. Scrum deals with change by building software in increments versus an all-at-once approach. Scrum also makes continuous assessment throughout the building process.
3. Scrum reviews the finished increment and makes the appropriate changes for the next increment building process. (Harvie & Agah, 2016)

The basic process of the Scrum framework is presented in Figure 7 below.

[2] In https://www.scrumalliance.org/ (accessed on May 22, 2017)

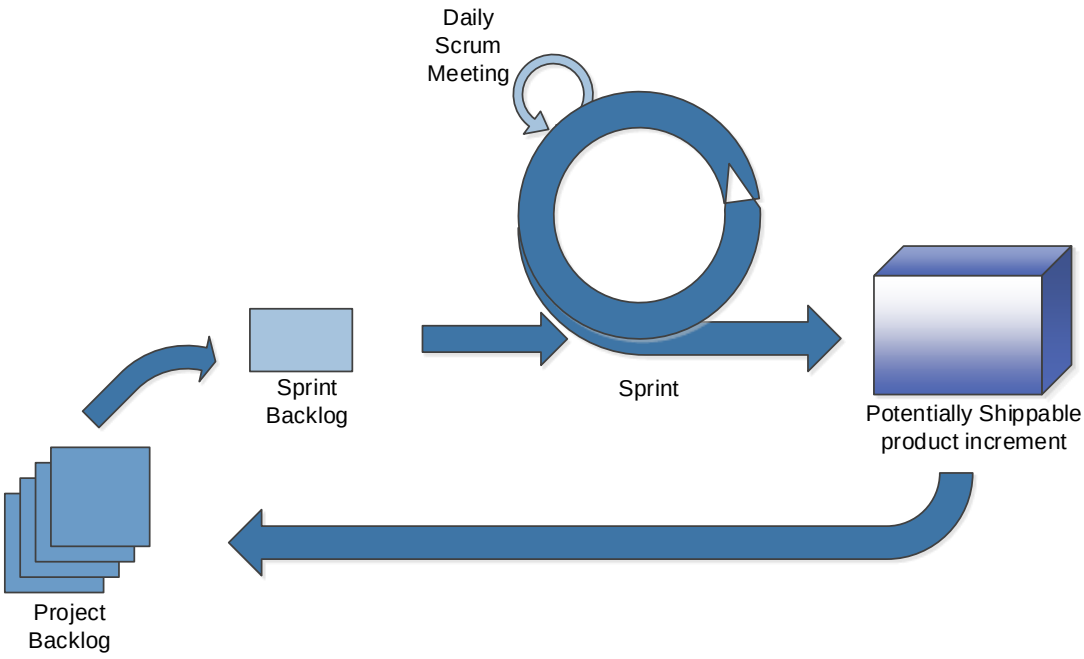


Figure 7: Basic Scrum process framework
Source: Adapted from (Harvie & Agah, 2016; Rubin, 2012; Schwaber, 1997)

The main elements of the Scrum process are the following:

Product Backlog

The product backlog is a prioritized inventory of yet-to-be-worked-on items, a set of functionalities and technical or architectural features desired by the product owner. They can consist of new features, changes to existing features, defects, technical improvements, etc. (Rubin, 2012).

Sprint Backlog

The features in the Sprint Backlog are prioritized and the highest priority items are chosen to be implemented during the next Sprint. This set of items are called the Sprint Backlog and are broken down into a set of tasks (Rubin, 2012).

Sprint

In the Scrum process framework, the project is divided into fixed duration development periods, called Sprints – analogous to what are designated by Extreme

Programming (XP) as Iterations. The duration of the sprints is fixed and can range from 2 to 4 weeks or, at most, a calendar month, during which the Scrum Team adds functionality to the product. Each Sprint is preceded by a Sprint Planning Meeting, during which the Product Owner, Scrum Master, and Scrum team determine what portion of the Product Backlog should be developed. (Harvie & Agah, 2016).

Daily Scrum Meeting

Each day, during the Sprint, the Scrum Team meets in the morning, before starting the daily work, for 15 minutes. The meeting is held standing up – some authors call it "daily stand-up meeting" – and is time boxed and in the form inspect-and-adapt (Rubin, 2012). During this meeting, which is moderated by the Scrum Master, each member of the team answers three questions (Harvie & Agah, 2016, p. 479)

1. "*What has been accomplished since the last meeting?*"
2. "*What will be done before the next meeting?*"
3. "*What obstacles are in the way?*"

Product Increment

The result of the sprint – its deliverable – is the product increment, also referred to as the "*Potentially Shippable Product Increment*" (Rubin, 2012). Potentially shippable implies that what is delivered is a completed version, meaning it must yield a "*complete slice of product functionality that is designed, built, integrated, tested and documented.*" (Rubin, 2012, p. 92). The product increment is presented during a Sprint Review meeting, during which the team presents an assessment of what they were able to accomplish during the Sprint (Harvie & Agah, 2016).

Sprint Planning and Sprint Review

The Sprint Planning and the Sprint Review meetings are two very important meetings held before and after the execution of each sprint, respectively.

On the Sprint Planning meeting, the Scrum team chooses the spring goal, which is the objective of the next Sprint, i.e., defines what the next Sprint is supposed to achieve. The chosen Sprint Goal is used to select the items from the Project Backlog that the team can commit to complete during the upcoming sprint (Rubin, 2012).

The Sprint Review meeting is held at the end of the Sprint, and its objective is to demonstrate the newly developed features of the work completed during the scrum and also to inspect and adapt those features for the future work (Harvie & Agah, 2016; Rubin, 2012).

Creating the Project Backlog

There are specifically defined ceremonies and techniques to create the project backlog items, that is, to write the requirements of a project. Mike Cohn (2004) favours for this process the term "*trawling*" to describe the process of gathering requirements, instead of terms like "elicitation" or "capturing", as he argues that these terms imply the requirements are "*are out there somewhere and all we need to do is have them explained to us*" (Cohn, 2004, p. 43). The term "trawling", on the other hand, transmits the idea of gathering the requirements by phases, in different levels of detail. The technics used in the gathering (trawling) of the requirements are interviews, questionnaires, observation and story-writing workshops. Of the four technics, the author states that story-writing workshops are the most effective way of gathering the requirements.

3. PHILOSOPHICAL PERSPECTIVE AND RESEARCH STRATEGY

3.1. Introduction

The research in the areas of management and, in particular, information systems management, aims to produce a body of knowledge to help the researchers understand and explain the social world (Caldeira, 2000). This research should always aim to produce new knowledge that is simultaneously rigorous and useful, thus aligning the needs of stakeholders both from the academy and from the industry (Dresch, Lacerda, & Júnior, 2015). According to these authors, the efforts of researchers should focus on the research that has both a high theoretical and methodological rigour and a high practical relevance, thus falling in the second quadrant of the four-fold typology presented by Hodgkinson, Herriot and Anderson (2001), in Figure 8 below.

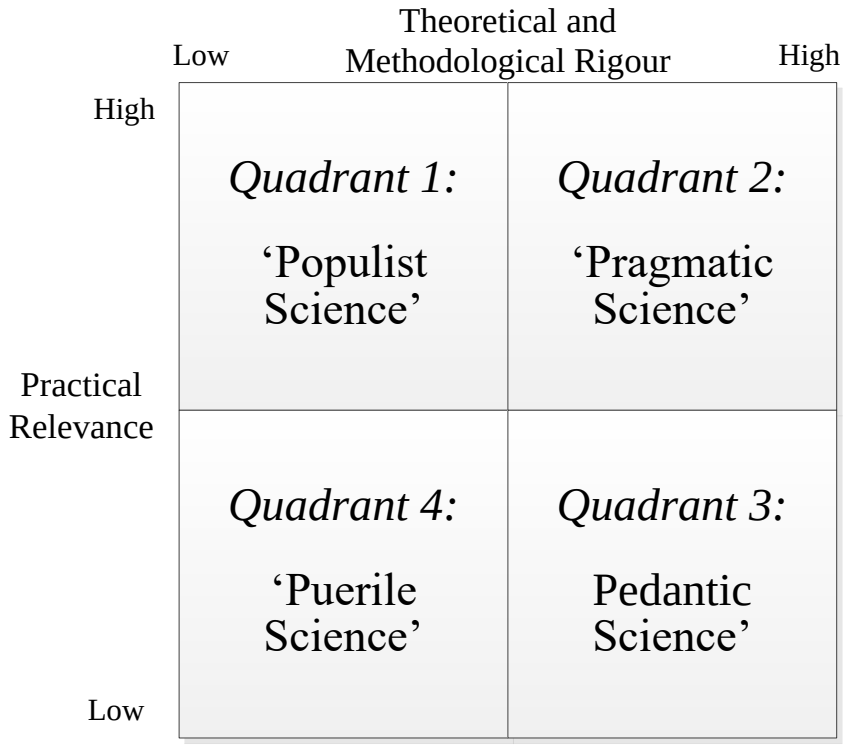


Figure 8: Typology of research by rigour and relevance
Source: (Hodgkinson et al., 2001, p. 42)

With the objective of adopting a research strategy that aims to fit the second Quadrant defined by Hodgkinson, Herriot and Anderson (2001) – Pragmatic Science –

the present research was conducted resorting to a methodology that adheres to the philosophical perspective of Critical Realism, as explained in this chapter.

Dobson (2001) argues that, as Information Systems research is mainly an applied field, there is a tendency to give more attention to practical and methodological issues then the philosophical reasoning behind a particular research approach. Thus, that author encourages the Information Systems researchers to reflect on and define their philosophical stance when writing their work.

3.2. Philosophical Perspective

This section presents a brief overview of the different philosophical perspectives that support the research in social sciences, to justify the strategy and methodological assumptions used in this study.

According to Saunders, Lewis and Thornhill (2012), what mostly influences the philosophy adopted by a researcher is his/her particular view of what is "*acceptable knowledge and the process by which it is developed*" (Saunders et al., 2012, p. 128). Thus, each researcher must adopt a position in what concerns to ontology, i.e., the nature of reality or the phenomena under investigation and in relation to epistemology, which deals with what is considered or the ways in which is possible to acquire knowledge.

3.2.1. Ontology

In what concerns the nature of reality – ontology – Saunders, Lewis and Thornhill (2012) classify research in objectivism or subjectivism. Objectivists believe that the social entities exist in reality, externally and independently of the social actors. In the example suggested by these authors to further explain this statement, management itself can be considered as an objective entity within an organization, as it has its own rules and managers have their job descriptions and operating procedures and operate within a hierarchic organizational structure, reporting to other managers and having people reporting to them. Thus, according to the proponents of the objectivist view of management, the essence of management is the same in different organizations, differing only in the specific aspects of each environment. On the other hand subjectivists believe that the social phenomena "*are created through the perceptions and consequent actions of affected social actors*" (Saunders et al., 2012, p. 131), which means that reality is

constantly being shaped or constructed by the actors in each situation – thus subjectivism being frequently associated with social constructivism, as stating that reality is socially constructed. The different interpretation of reality by each actor will affect his/her actions and the way he/she interacts with others. Saunders, Lewis and Thornhill (2012) illustrate this concept with a simple idea: the customer service of an organization has a reality that is different from the reality of the customers it services, so it is constantly being shaped by the interactions between the customers and the service providers. At no time there is a definite objective entity called 'customer service', as it is constantly being constructed.

3.2.2. Epistemology

In what concerns what is considered acceptable knowledge in a given field of study – epistemology – the research in the information systems areas has historically favoured a positivist philosophy, although during the 1980s and 1990s several other research initiatives have been using a different philosophic perspective, in particular Interpretivism. (Mingers, 2004). The following paragraphs, present a brief description of three philosophical perspectives for what is accepted as knowledge, namely Positivism, Interpretivism and Realism, as the later was the one adopted in the scope of this research.

Positivism

Positivist researchers normally favour the collection of data about an observable entity, aiming to find regularities and cause-effect relationships which allows to define laws and generalizations (Saunders et al., 2012). This is the philosophic perspective of the natural sciences, although it has been extensively used also in social sciences. In this type of research strategy, existing theory is often used to formulate hypothesis, which are then tested and either partly or fully confirmed or refuted. This leads to the formulation of new hypothesis that will in turn be tested and either confirmed or refuted. The main focus of the researcher is the facts, not the impressions and the research are undertaken in a value-free way. The researcher is external and independent of the object being researched. Hirschheim (1985) defines positivism as "*an epistemology which posits beliefs (emerging from the search for regularity and causal relationships) and scrutinizes them through empirical testing*" (Hirschheim, 1985, p. 12), and is, according to the author, so embedded in our society that knowledge which is not grounded in this paradigm is considered invalid as not really scientific. The referred author criticises this line of

thought and its supporters, like Popper, giving as an example Einstein theory of relativity which, he claims, viewed at these lens, was considered a pseudo-science at one time and is now accepted as proper science.

Hirschheim (1985) explains positivism as being supported by five pillars, as shown in Table 8.

Table 8: The five pillars of Positivism

(1)	**Unity of the scientific method**, which means the approach for knowledge acquisition is the same for all forms of enquiry and in all the science domains.
(2)	**Search for all human causal relationships**, which reflects the desire to find regularities and cause-effect relationships between the elements.
(3)	**Belief in empiricism**, which refers to the conviction that "the only valid data is that which is experienced from the senses".
(4)	**Science and its process is value-free**, which means that the science has no relation at all with the political, ideological or moral values of the scientist.
(5)	**The foundation of science is based on logic and mathematics**, which provide "a universal language and a formal basis for quantitative analysis, an important weapon in the search for causal relationships.

Source: Adapted from (Hirschheim, 1985, p. 13)

Saunders, Lewis and Thornhill (2012) argue that a positivist researcher is likely to use a highly structured melhodology in order to facilitate replication and prefer the use of quantifiable observations and apply statistical analysis, although the authors admit that it is possible also to use in social science research some characteristics of positivism, like hypothesys testing using data collected in in-depth interviews.

Interpretivism

The proponents of the Interpretivist philosophical view of research argue that our knowledge of reality is a social construction by human actors, and the social world is subjective and can be understood only by interpreting the activities which are to be studied (Walsham, 2006). According to those proponents, the complexity of the social

world of business and management does not permit it to be defined by laws in the same way as the physical sciences, as reducing its complexity to a series of law-like generalizations would imply losing the richness of this world (Saunders et al., 2012). According to Walsham (2006), Interpretivism has been used much more in the IS field than it was in the early 1990s.

Critical Realism

The philosophy of Realism rests in the assumption that there is a reality which has an existence independent of the human mind. Thus, the epistemology of Realism derives from Positivism in the sense that it assumes a scientific approach in the development of knowledge. On the other hand, Realism assumes that we can only know them by our own interpretations and descriptions. Saunders, Lewis and Thornhill (2012) distinguish between two types of Realism: **Direct Realism**, which states that "*what you see is what you get: what we experience through our senses portrays the world accurately*" and **Critical Realism**, which argues that "*what we experience are sensations, the images of the things in the real world, not the things directly*", which means that our senses may frequently deceive us (Saunders et al., 2012, p. 136).

Dobson (2001), rephrasing the words of another author, states that "*Though the (natural (or object)) world does not change with the change of paradigm, the scientist afterward works in a different (social (or cognitive)) world*" (Dobson, 2001, p. 201). Although the world exists independently of our knowledge of it, which is consistent with the positivist view of science, the social phenomena are mainly concept-dependent, so we have to understand, read and interpret what they mean. Although the social phenomena have to be interpreted by the researcher using his own frames of meaning, they exist regardless of the researcher's interpretation of them (Sayer, 1992). This research is therefore in favour of the interpretation given by Saunders, Lewis and Thornhill (2012), when these authors state "*the critical realist's position that the social world is constantly changing is much more in line with the purpose of business and management research, which is too often to understand the reason for phenomena as a precursor to recommending change*" (Saunders et al., 2012, p. 137).

3.3. Research Strategy

Before presenting the research strategy followed during this thesis, it is necessary to define research. The author follows the definition of Research as "*a process through which we attempt to achieve systematically and with the support of data the answer to a question, the resolution of a problem, or a greater understanding of a phenomenon*" (Hevner & Chatterjee, 2010, p. 3).

Different classifications have been created by several authors on the theme of Information Systems Research. Gregor (2006) presents a taxonomy for the types of theory in the field of Information Systems Research, as presented in the following table:

Table 9: A Taxonomy of Theory Types in Information Systems Research

Theory Type	**Distinguishing Attributes**
I. Analysis	Says what is. The theory does not extend beyond analysis and description. No causal relationships among phenomena are specified and no predictions are made.
II. Explanation	Says what is, how, why, when, and where. The theory provides explanations but does not aim to predict with any precision. There are no testable propositions.
III. Prediction	Says what is and what will be. The theory provides predictions and has testable propositions but does not have well-developed justificatory causal explanations
IV. Explanation and Prediction (EP)	Says what is, how, why, when, where, and what will be. Provides predictions and has both testable propositions and causal explanations.
V. Design and Action	Says how to do something. The theory gives explicit prescriptions (e.g., methods, techniques, principles of form and function) for constructing an artefact.

Source: (Gregor, 2006, p. 620)

The study to be performed in this research project mainly follows type V of the taxonomy presented in Table 9 above (Design and Action), as it will follow the Design Science Research methodology.

The scientific research can be classified in Natural Science, Social Science and Design Science (Dresch et al., 2015). Natural Science, which includes the traditional research fields like Mathematics, Physics, Biology, among others, is concerned with

explaining how and why things are, and develop concepts with which to characterize phenomena. The products of Natural Science are theories, which are evaluated by their explanatory power (March & Smith, 1995). Social Science, which includes, among others, fields like Anthropology, Economy, Politics, Sociology, History, aim to describe, understand and reflect about the human beings and their actions (Dresch et al., 2015). Social Science research is concerned with people and their life contexts, and with philosophical questions relating to the nature of knowledge and truth, values and beings which sustain human activities (Somekh & Lewin, 2005).

The research in Information Systems has traditionally been divided between two paradigms: Behavioural Science and Design Science (Hevner, March, Park, & Ram, 2004). Behavioural science's objective is to develop and verify theories to explain and to predict human and organizational behaviour (Hevner et al., 2004). It aims to attain "the truth", i.e., to explore and validate the generic cause-effect relations and statistical significance is established as the common measure of its results' rigour (Winter, 2008). The Design Science paradigm, on the other hand, which is commonly used in Information Systems and also in areas like Medicine, Engineering and Management (Dresch et al., 2015), attempts to create things that serve human purposes and its products are assessed against criteria of value or utility (March & Smith, 1995). In this paradigm, "*knowledge and understanding of a problem domain and its solution are achieved in the building and application of the designed artefact*" (Hevner et al., 2004).

In what concerns the research approaches, the research theory has distinguished between Induction, Deduction and Abduction. In Deduction, which is the dominant research approach in the natural sciences, the researcher starts by developing a theory, which is then subjected to a rigorous test through a series of propositions (Saunders et al., 2012). Deduction draws on Popper's Falsification premise which states that a theory can only be shown to be wrong, but never be proven to be right (Lee, Pries-Heje, & Baskerville, 2011). Induction, on the other hand, is based on the premises and the inference of an idea from the observed data, to propose a universal law (Dresch et al., 2015). In the deductive approach, the researcher moves from theory to data, and in induction from data to theory (Saunders et al., 2012). Abduction, on the other hand, is "*the process by which a researcher moves between induction and deduction while practicing the constant comparative method*" (Suddaby, 2006, p. 639). Abductive reasoning is often referenced in scientific discovery and problem-solving (Holmström,

Ketokivi, & Hameri, 2009). Thus, the present research work draws on the Abduction research approach.

> *"The abductive reasoning approach is useful for design theorizing, because the purpose of design theory is to enable search for a satisficing solution for a given design problem. Its purpose is not to derive a hypothesis from the existing body of knowledge and test it in a closed system (deductive theorizing); nor does it intend to infer a conclusion from an observation in an open system (inductive theorizing)* (Lee et al., 2011, p. 4)

3.4. Design Science

> *"A design theory is a prescriptive theory based on theoretical underpinnings which says how a design process can be carried out in a way which is both effective and feasible. Since they are prescriptive, design theories differ from explanatory and predictive theories found in the natural or physical sciences"* (Walls, Widmeyer, El Sawy, & Sawy, 1992, p. 37)

Most research in the Information Systems area is performed with one of two research paradigms: behaviour science or design science. The first aims to create or verify theories to predict or explain human behaviour or organizational behaviour, whilst the second aims to create new and useful artefacts. (Hevner et al., 2004). The present research work uses the Design Science Research in Information Systems. The objective is to improve the Benefits Management process and to create a software tool to help on the usage of the improved process method, in terms of data collection, automation of reports or other functionality.

"**Design**" can be defined as "*the use of scientific principles, technical information and imagination in the definition of a structure, machine or system to perform a pre-specified function with the maximum economy and efficiency*" (Walls et al., 1992, p. 36).

Design Science is positioned as an epistemological paradigm that will guide research aiming problem solving and the creation of artefacts (Dresch et al., 2015). "*Design Science is an inventive or creative, problem solving activity, one in which new technologies are the primary products.*" (Venable, 2006, p. 1).

> *A natural science is a body of knowledge about some class of things – objects or phenomena – in the world (nature or society) that describes and explains how they behave and interact with each other. A science of the artificial, on the other hand, is a body of knowledge about artificial (man-*

made) objects and phenomena designed to meet certain desired goals.
(Vaishnavi & Kuechler Jr., 2007, p. 8)

The fundamental characteristics of design theories are presented in Table 10 below.

Table 10: Fundamental characteristics of Design Theories

1. Design theories must deal with goals as contingencies
2. A design theory can never involve pure explanation or prediction
3. Design theories are prescriptive
4. Design theories are composite theories which encompass kernel theories from natural science, social science and mathematics
5. While explanatory theories tell "what is", predictive theories tell "what will be", and normative theories tell "what should be", design theories tell "how to/ because"
6. Design theories show how explanatory, predictive, or normative theories can be put to practical use
7. Design theories are theories of procedural rational

Source: (Walls et al., 1992)

The fundamentals of Design Science can be traced to the XV century when Leonardo da Vinci understood the importance of engineering, inventing solutions to problems that, by then, renowned scientists had been unable to solve using the fundamentals of traditional physics (Dresch et al., 2015). These authors present a timeline of what they consider the most significant milestones that contributed to Design Science. The timeline is in Figure 9.

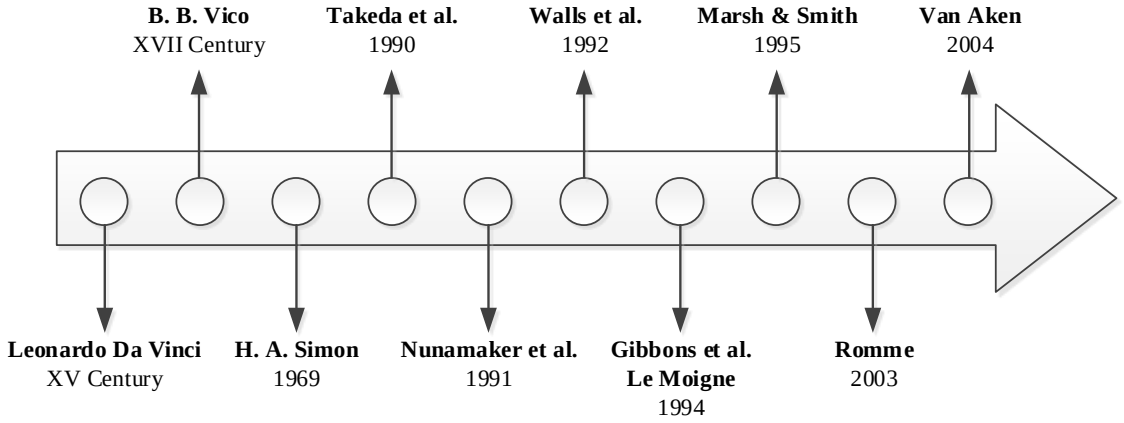


Figure 9: Milestones with main contributions to Design Science
Source: (Dresch et al., 2015, p. 53)

Design science, as a research paradigm, differs from the positivist or interpretive perspectives in the ontology, epistemology and methodology. The differences are highlighted in Table 11 bellow.

Table 11: Contrasting beliefs associated with major research paradigms

Basic beliefs	Positivist / postpositivist	Interpretive / constructivist	Socio-technologist / developmentalist
Ontology: What is the nature of reality?	One Reality; knowable with probability	Multiple socially constructed realities	Known context with multiple socially and technologically created realities
Epistemology; What is the nature of knowledge?	Objectivity is important; researcher manipulates and observes in dispassionate objective manner	Interactive link between researcher and participants; values are made explicit; crated findings	Objective/Interactive; Researcher creates the context and incorporates values that are deemed important
Methodology: What is the approach for obtaining the desired knowledge and understanding?	Quantitative (primarily); interventionist; decontextualized	Qualitative (primarily); hermeneutical; dialectical; contextual factors are described	Developmental (primarily); focus on technological augmentations to social and individual factors

Source: (Gregg, Kulkarni, & Vinzé, 2001, p. 172)

3.5. Design Science Research

Hevner and Chatterjee (2010) define Design Science Research as "*a research paradigm in which the designer answers questions relevant to human problems via the creation of innovative artefacts, thereby contributing new knowledge to the body of scientific evidence*" (Hevner & Chatterjee, 2010, p. 5). The authors also state that the

designed artefacts are both useful and fundamental in understanding the problem at hand and define what they call the first principle of Design Science Research as follows:

> *The fundamental principle of design science research is that knowledge and understanding of a design problem and its solution are acquired in the building and application of an artefact.* (Hevner & Chatterjee, 2010, p. 5)

Design Science Research and Behavioural Science Research are two very different but complementary research paradigms, both involved in the productive application of information technology, as shown in Figure 10 (Hevner & Chatterjee, 2010).

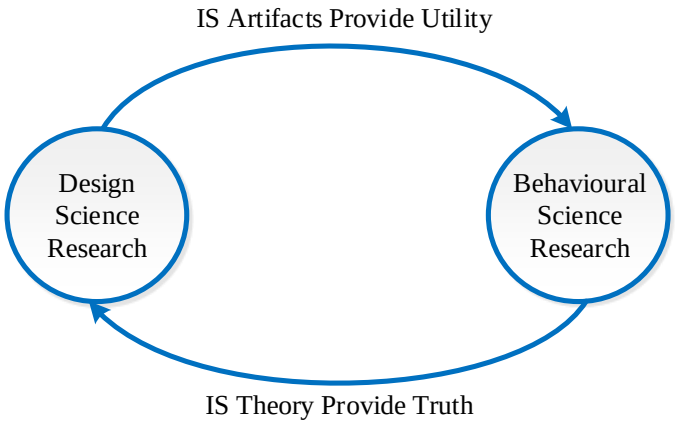


Figure 10: Complementary nature of design science and behavioural science research
Source: (Hevner & Chatterjee, 2010, p. 11)

As the deliverable of Design Science Research is an artefact, it is important to define the concept of "artefact". Artefact can be described as something that is artificial, created by humans, by art rather than by nature, man-made as opposed to natural (Simon, 1996). Hevner and Chatterjee (2010), define the types of artefacts in the Information Systems areas. They are presented in Table 12 bellow.

Table 12: Types of artefacts created in the Information Systems Design Science Research

1. Constructs – vocabulary and symbols
2. Models – abstractions and representations
3. Methods – algorithms and practices
4. Instantiations – implemented and prototype systems
5. Better design theories

Source: adapted from (Hevner & Chatterjee, 2010)

In the present research, the types of artefacts created were type 3, in what concerns practices (a new proposed way to use an existing Information Systems Benefits Management approach) and type four, in the creation of a software tool prototype for managing the Benefits Dependency Network items.

Design Science Research has two main phases. Phase one is the development of the artefact; phase two is its evaluation. The researcher in design science research creates the artefact to solve a given research problem and then provides evidence that the created artefact really solves a problem. Evidence-based artefact evaluation is crucial in design science research (Hevner et al., 2004). There are several methods for evaluation of the designed artefacts. Table 13 presents the different design evaluation methods.

Table 13: Design Evaluation Methods

1. Observational	Case Study: Study artefact in depth in business environment
	Field Study: Monitor use of artifact in multiple projects
2. Analytical	Static Analysis: Examine structure of artefact for static qualities (e.g., complexity)
	Architecture Analysis: Study fit of artefact into technical IS architecture
	Optimization: Demonstrate inherent optimal properties of artefact or provide optimality bounds on artefact behaviour
	Dynamic Analysis: Study artefact in use for dynamic qualities (e.g., performance)
3. Experimental	Controlled Experiment: Study artefact in controlled environment for qualities(e.g., usability)
	Simulation – Execute artefact with artificial data
4. Testing	Functional (Black Box) Testing: Execute artefact interfaces to discover failures and identify defects
	Structural (White Box) Testing: Perform coverage testing of some metric (e.g., execution paths) in the artefact implementation
5. Descriptive	Informed Argument: Use information from the knowledge base (e.g., relevant research) to build a convincing argument for the artefact's utility
	Scenarios: Construct detailed scenarios around the artefact to demonstrate its utility

Source: (Hevner et al., 2004)

In the present research project, the artefact evaluation phase was conducted using the Observational type, specifically the Case Study method.

3.5.1. Focus Group

The first part of the project resorted to the use of focus groups (Bader & Rossi, 1998; Bloor, Frankland, Thomas, & Robson, 2001; Stewart & Shamdasani, 1990). In this phase of the project, we intended to draw on the experience and expertise of a group of individuals to try to find the flaws, if there are any, in the current process of Benefits Management that might be preventing a broader use of the method in real projects.

Focus Group can be defined as a "*special type of group interview that is structured to gather detailed opinions and knowledge about a particular topic from selected participants*" (Bader & Rossi, 1998, p. 5). Focus Groups as a research tool are frequently used in social sciences research. It originated in the 1940s at Columbia University's Bureau of Applied Social Research (Bloor et al., 2001). This tool consists on a group interview with a typical duration of one and a half to two and a half hours, involving 8 to 12 persons discussing the topic under research, having a moderator who guides the interview (Stewart & Shamdasani, 1990). These authors claim that this technique can be used in both exploratory and confirmatory research and give a list of seven possible uses for focus groups. Among those, are "stimulating new ideas and creative topics" (number 3) and "diagnosing the potential for problems with a new program, service, or product" (number 4) (Stewart & Shamdasani, 1990, p. 15), which fit the reasons for use in the present research.

Focus Groups can be used as an adjunct to other methods and, as an ancillary method, "*may operate at the beginning, middle and end of projects*" (Bloor et al., 2001, p. 9).

The data collected in Focus Groups, as well as other techniques like unstructured individual depth interviews, are closer to the data that arise in a more "natural and indigenous form". The reason is that it allows individuals to "respond in their own words, using their own categorizations and perceived associations", whilst the data collected in surveys organizes the answers in the categories that have been prescribed by the researcher. (Stewart & Shamdasani, 1990, p. 13).

In cases where the participants are busy professionals and executives, they might be difficult to reach. This problem can be overcome using modern technology, like teleconferencing or videoconferencing. The technique can also be used when there is the need to address sensitive questions, to allow confidentiality (Bloor et al., 2001), although this is not the case in the present research. Other authors claim that "*The application of technology to focus groups has created countless new possibilities*" (Bader & Rossi, 1998, p. 44). There are different possibilities in using technology for focus group research. Bader & Rossi (1998) present the following 3 types:

1. Online Focus Group
    - Real Time
    - Bulletin Board
2. Teleconferencing
3. Videoconferencing

Although some of the early reports on this technique suggest that the researcher do the manual recording of the group interaction, "*the need for manual recording has disappeared as audio-recording equipment has progressively improved in quality since the reel-to-reel recorders used in the 1970s*" (Bloor et al., 2001, p. 41).

The recording of the focus group session can be transcribed to text, to be further analysed. According to Bloor et al. (2001), the simple analysis of the recordings on the basis of listening and the notes and memory of the moderator is not satisfactory for academic research, as it will lead to a loss of richness of the data risk a selective and superficial analysis. Other authors have a different opinion, stating that "*there are occasions when transcripts are unnecessary. When decisions must be made quickly and the conclusions of the research are rather straightforward, a brief summary may be all that is necessary and justifiable.*" (Stewart & Shamdasani, 1990, p. 102).

For the analysis of the focus group data, there are different types of techniques, but for an in-depth exploration of a topic about which little is known, a simple descriptive report can be appropriate (Stewart & Shamdasani, 1990).

3.5.2. Case Study

As referred above, the validation component of the design science research used in this research project resorted to the Case Study research method. (Stark & Torrence, 2005; Yin, 2009). The main idea for this phase was to test the refined method previously designed, along with the software tool created, in a practical case, to assess both the refined method and the created artefact. In this section, the literature review about the Case Study research method is presented.

According to Yin (2009), the conditions that tend to lead to the use of a specific preferred strategy in a research work are depend on a combination of three factors, which are presented in Table 14 bellow.

Table 14: Relevant situations for different research strategies

Strategy	Form of research question	Requires control of behavioural events	Focuses on contemporary events
Experiment	how, why	Yes	Yes
Survey	who, what, where, how many, how much	No	Yes
Archival analysis	who, what, where, how many, how much	No	Yes/No
History	how, why	No	No
Case Study	how, why	No	Yes

Source: (Yin, 2009)

Thus, as shown in Table 14, the conditions that normally lead to the use of case study as a research strategy are the ones in which the research question is in the form "how" or "why", there is no need for control of the behavioral events by the researcher and the object of the study deals with contemporary events. In a new edition of his book (4th edition, published in 2009), Yin goes further to state that case studies are the preferred method whenever "how" or "why" questions are being posed and the investigator has little control over events, and the focus is on a contemporary phenomenon within a real-life context (Yin, 2009).

One of the most notorious academics that study the theory and practices of case study research, Robert Yin, acknowledges that this research method, like all others, has its strengths and limitations. He gives the example of astronomy within the natural sciences, which does not rely on the experimental method, and the neurophysiological and neuroanatomical sciences that do not rely on statistical methods (Yin, 2009). The same author states the importance of case study in evaluation research, presenting four different applications of this method for research evaluation: **explain** the causal links, **describe** an intervention, **illustrate** topics within the evaluation and **enlighten** certain situations (Yin, 2009).

In this phase of the research project, the question under investigation is how a revised method, along to a software tool, can in practice, facilitate the use of a formal process method of benefits management in an intervention that is highly supported by the implementation of an IS/IT system. This is clearly a "how" type of question. The research will follow and analyze the events, so it will not control their behavior, and it will definitely focus on contemporary events, analyzing them as they occur. Under these conditions, and taking into account Table 2 above and Yin (Yin, 2009), the case study is the adequate research strategy for the validation phase of a design science research project.

4. PRELIMINARY FIELD WORK

As mentioned above in section 2.6, although there are several known methods for the management of the benefits from IS/IT interventions, the real actual usage of formal Benefits Management processes is relatively low. Some reasons for this phenomenon have been suggested in the literature (Hallikainen et al., 2006; Hesselmann et al., 2015; Lin & Pervan, 2003; Pfeffer & Sutton, 1999).

In this work, we draw on the reasons presented by the aforementioned authors, summarizing those reasons on the excess rigidity of the Benefits Management process models, which can be compared to the waterfall model for software development.

In fact, if we take the Benefits Management process model presented in Figure 2, and stretch it, we get a model that clearly resembles the waterfall process model, as we can see in Figure 11.

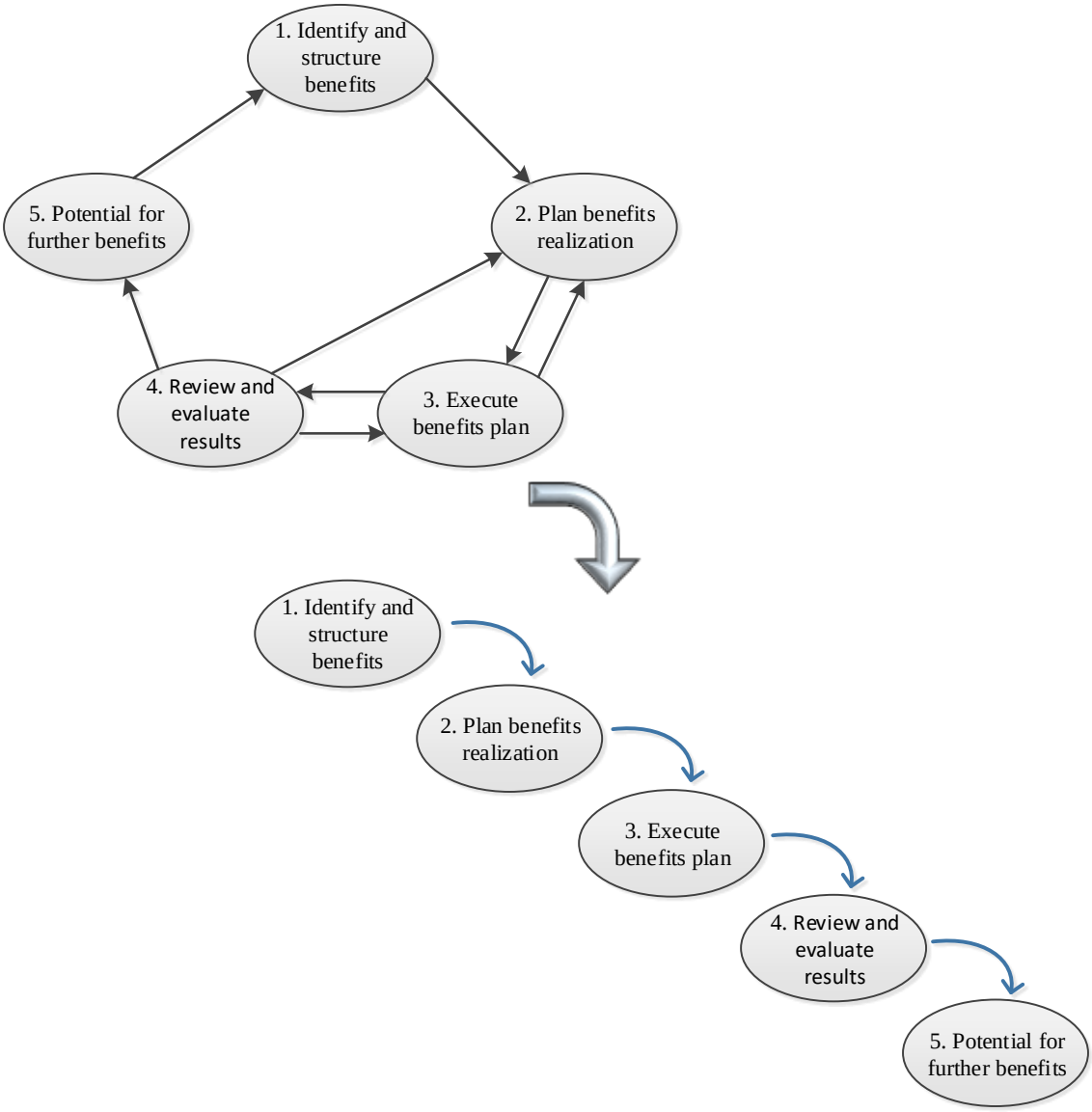


Figure 11: Stretching of the Benefits Management Process Model to Waterfall-like
Created by the author

As mentioned before and asserted by several authors, the Waterfall model has several disadvantages, namely it is a rigid and bureaucratic model that is hard to follow and barely resembles the real world (Ambler, 2004; Balaji & Murugaiyan, 2012; Boehm, 1996; Fischer & Schneider, 1984; Takeuchi & Nonaka, 1986). To overcome the problems with the Waterfall model for software development and systems implementation, the industry is turning to the Agile framework and process models for software development and also for project management models, namely the Scrum model (Collyer et al., 2010; Schwaber, 2004; Stettina & Hörz, 2015).

Looking at the process model for Scrum presented in Figure 7, and comparing it to the phases of the Benefits management process, we can establish some similarities, as shown in Figure 12:

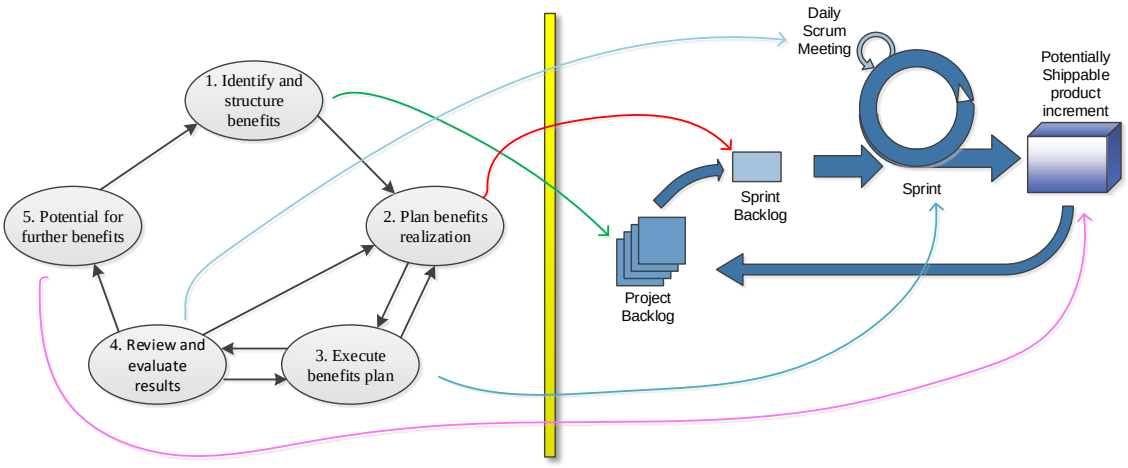


Figure 12: Similarities between Benefits Management and Scrum phases

Given the similarities found between the phases of the Benefits Management process and the Scrum process, we aim to propose to adapt the phases of the former to the Scrum agile process, thus giving the Benefits Management Process an Agile approach.

4.1. Current Benefits Management Process

The current Benefits Management process has five stages, here described.

Identify and Structure Benefits

The first phase within the Benefits Management process is the identification and structuring of the Business Benefits. The objectives of this phase are the ones in Table 15 below.

Table 15: Objectives of Identification & Structuring of Benefits

Establish agreed objectives for the investment that ensure it relates to one or more of the drivers for change in the organization
Identify all the potential benefits that could be obtained by achievement of the investment objectives
Understand how a combination of IS/IT functionality and business changes can cause the benefits to be realized
Establish ownership of the benefits and determine whether they can be measured to prove that they have occurred
Identify any organizational issues or implications for particular stakeholder groups that could hinder or even cause the project to fail
Produce an outline business case to decide whether to proceed further or stop the investment now.

Source: (Ward & Daniel, 2012, p. 69)

The authors also defined a process to perform this phase, as presented in Figure 6, which has as its deliverable the partly finished Benefits Dependency Network (BDN) shown in Figure 5.

Plan Benefits Realization

The second phase in the Benefits Management process is the building of a plan for the realization of the business benefits. The deliverable of this phase is the full benefits plan and business case to be submitted for approval, containing:

- Description of each benefit and each business change and enabling change, including the ownership and responsibility for all benefits and changes
- The measures for each benefit and, when applicable, the expected values
- The criteria to assess that each change has been implemented
- The Benefits Dependency Network complete and documented (Ward & Daniel, 2012)

In an ideal world, after this phase the complete BDN should be delivered as the output of this phase, just as in the end of phase one of the Waterfall model for software development, the complete Requirements Definition document should be delivered. On the other hand, one of the problems often pointed out regarding the Waterfall model, is the assumption that the complete set of requirements should be delivered at the beginning

of the project. In fact, as early as 1982 this problem has been pointed out, and referred to as a main issue:

> *"An increasing awareness that systems requirements cannot ever be stated fully in advance, not even in principle, because the user doesn't know them in advance--not even in principle. To assert otherwise is to ignore the fact that the development process itself changes the user's perceptions of what is possible, increases his or her insights into the applications environment, and indeed often changes that environment itself."* (McCracken & Jackson, 1982, p. 31)

In the same way, it is highly unlikely that the output of this phase of the Benefits Management process will be the complete BDN. Most probably, it will encompass a partial BDN, containing high-level elements and some already known completely defined Benefits. The rest will be completed in later stages of the project.

Execute the Benefits Plan

This phase of the intervention is where the changes are applied in the organization to obtain the expected benefits. The changes are the IS/IT projects, that will permit the implementation of the enabling changes, which in turn will allow the implementation of the permanent business changes, thus letting the organization attain the expected business benefits. As already mentioned above, "*Benefits emerge only when individuals or groups within an organization, or its customers or suppliers, perform their roles in more efficient or effective ways.*" (Peppard et al., 2007, p. 2), thus it is by doing things differently after putting in place the business changes that the benefits might emerge.

Review and evaluate the results

The purposes of this phase are to determine which planned benefits have or have not been achieved, identify any unexpected benefits or "*disbenefits*" that might have appeared, understand the reasons for the obtained or unattained results and learn for future interventions (Ward & Daniel, 2012). It is not and cannot be confused with, a project management review meeting, or system performance and quality review, or even a financial audit. These are other important project activities which are unreplaceable. The benefits review meeting intends to make a detailed assessment of whether the expected Business Benefits have or have not, been achieved (Ward & Daniel, 2012).

Conducting project reviews after closing a project, or project post-mortems or project retrospective analysis is recognized as a way to improve knowledge and avoid future failures (Nelson, 2007). "*In an attempt to avoid disasters going forward, many organizations are now learning from the past by conducting retrospectives*" (Nelson, 2007).

Establish potential for further benefits

In this phase, the intervention is analysed with the perspective to look for further improvements that can bring more benefits to the organization, which could otherwise be overlooked. The new benefits may require more business changes and possibly other IS/IT investments, so this phase may even lead to a whole new intervention (Ward & Daniel, 2012).

4.2. Proposal for a changed Benefits Management Process

The process described above for dealing with Benefits Management, has some embedded rigidity, resembling the waterfall model, which has been proved difficult to implement. The Agile methods, on the other hand, were created and introduced in software development to deal with the problems presented by the waterfall models. The agile practices which are recognized to work are mainly the following: adaptive planning, evolutionary delivery, time-boxed iterative approach, and flexible response to change (Cooper, 2016).

Another practice which has proven to work in the agile framework is the process of defining the user requirements and creating the product backlog by writing user stories in a process that some authors describe as "*trawling*" (Cohn, 2004). The process to write the user-stories works by having informal brainstorming workshops, where the requirements are presented without regarding to size, priority or level of detail. The advisable level of detail to write user-stories is to "*look into the future for approximately one release (perhaps three to six months) and then write user stories that decrease in detail as the time horizon increases*" (Cohn, 2004, p. 44).

In this research project, the author proposes to apply the aforementioned agile principles to the Benefits Management process, supported by the software tool developed for that purpose.

All the elements contained in the Benefits Management Network for the intervention being followed are defined the same way the user-stories are written in an agile software development project. This is done in brainstorming workshops, attended by the main project stakeholders, at which the elements of the network are discussed without regard to the links between them or to their level of detail or even whether they might be later discarded. The elements – Investment Objectives, Business Benefits, Business Changes, Enabling Changes and IS/IT Enablers – are defined with all the information known about them and each loaded into the software tool. Whenever possible, the stakeholder responsible is also assigned. The links between the elements are created when and only when they are known. The software tool will help the team to maintain and change the data as necessary along the project.

Time-boxed meetings will be defined at fixed intervals to update all the information and perform the follow-up of the intervention, thus achieving the evolutionary and iterative approach. One of the meetings that the Scrum methodology has within its ceremonies is the Sprint Review meeting. This meeting occurs after each sprint and is meant to present to everybody what the team has accomplished during the sprint. We propose that, during this meeting, the elements of the Benefits Dependency Network are also discussed, to assess their state of completion.

This altered process was presented to the focus group for initial validation and latter applied in a case study for a trial use, for the purposed of validation.

4.3. Focus Group on the 6th of June 2017

On the 6th of June 2017, a Focus Group was held at a meeting room in ISEG, University of Lisbon. The duration of the meeting was one hour and 32 minutes and the attendees were recognized academic and practitioners.

The focus Group session had two parts. During the first part, the author, who was simultaneously the session moderator, presented his ideas about the reasons for the relatively low usage of any formal Benefits Management process in major organizations. The author then went on to present some preliminary ideas about how to apply an agile approach for the Cranfield University's Benefits Management Process Model, namely

about the applicability of the Scrum agile process to the referred model. The session was then open for discussion.

The first participant to speak expressed his sentiment that he did not see any similarity or parallelism between Scrum and Benefits Management. According to this participant, the two processes are completely different, although he concedes that there could be some "*bridges*". He said Scrum is completely focused on software development and Benefits Management deals with the great investments in technology, both software and hardware. The author (acting as moderator) pointed out that Scrum (and the Agile model in general) has been successfully applied also in Project Management, thus the frequent references in the literature to the term "Agile Project Management".

The moderator also questioned the applicability of Benefits Management only to great IT investments, pointing out the fact that the literature refers to the term "intervention" instead of "project". He cited the phrase written by Ward & Daniel, when these authors stated that most strategic or change initiatives in organizations are supported in IS/IT. (Ward & Daniel, 2005). Thus, the driver for the intervention is the Business Change, not the technology.

The participant said that the Benefits Management process is a bureaucratic, heavy process that needs to hear and review all the stakeholders. The moderator questioned whether this was not the actual problem causing the relatively low usage of the Benefits Management process. The answer was that it is, in terms of bureaucracy, no different from project management, referring to the PBBOK as a somewhat frightening four hundred pages book that demands a huge amount of paperwork. He also conceded that the Project Management area has already made some advances into the agile world, with the agile project management.

The same participant then went on to say that, this type of work – the benefits management network – requires some degree of formalization and it would be good to have a tool to help managing all the boxes and connections. He then suggested the possibility of including within each task of the Benefits Management process a whole Scrum process.

The author explained that one of the Scrum ceremonies is the Sprint Planning meeting, by which the team chooses the Sprint Goal and then selects from the product

backlog the user stories and features that will allow the team to meet the chosen goal. This can be compared to the meeting where the stakeholders identify and structure the benefits and could be further used to choose a given stream to an objective.

Another participant stated that, in most cases referred in the literature, the authors present their cases of using the Benefits Management process without really saying how the method is actually applied, always letting people infer the method was implemented from start to finish in a linear way, which might not always be the case. He also mentioned an approach in Australia where the implementers decided that there would be only two meetings, no more than that, each meeting with a duration of no more than two hours each.

The participant went on to state that the Benefits, which derive from the Objectives, are initially at a macro level, and they should then be partitioned into smaller benefits, and these smaller benefits must be monitored and managed. If results are not appearing in the small benefits, then the whole intervention should be questioned and analysed, for as not to waste too much time.

The next point raised by this participant was that it is very interesting the fact the two worlds are separate, as it is a good challenge to try to see how they complement each other.

The participant then pointed out that all the recent literature on organizational strategy cantered on digital platforms and the modern world state that the new models on strategy bring companies to think as software factories. More and more the business is within platforms, so one must manage the business having within it the development of the platforms themselves, and this also brings the two worlds together.

This participant went on to state that, once the network is defined, the streams for each objective will eventually result in projects, that will have to be implemented to perform the necessary changes to attain the Benefits. If there are projects for each stream, then these projects must be managed, and this is where this form of managing he projects with Scrum allows the necessary flexibility in the way to address the stream. According to him, the challenge is to define the entry point for addressing this issue, as at a certain point the Benefits are sufficiently discrete to enter sprinting; we start with the traditional Benefits Management and then, at a certain point, we get the necessary granularity to start

sprinting to obtain each Benefit. The participant recalled what Pepper wrote about innovation-based projects, that in these cases the business manager does not understand the challenge, as it is a new technology he does not know about. In these cases, the project differs from the linear model, as it takes a "back and forward" pattern. Only when the business manager feels comfortable, will he decide that a proof of concept should be created, and a stream is identified to build a prototype. He also clarified that there are actually two types of innovation based interventions: the means-based, where it starts in the technology, and the ways-based, which start in the processes, normally pushed by consulting companies.

He then went on to refer a published paper on a case study about a certain intervention in which they divided it in two parts: one using a more traditional approach, because it was more deterministic and better understood by everyone, as it was automating the simpler processes that were better known by the company. The other part of the intervention, which they considered more innovative, was postponed to a second phase, where, according to this participant, this type of things would make a whole lot of sense. On this second phase things would have to be delivered continuously, as people leading these projects did not know exactly where it was going or where and when to stop. He said he believes that something like this makes a lot of sense, because what really changes in the Benefits Management plan can change the actual management model as a whole, using traditional models in some parts and other models in other parts, to help the progress.

After this part of the discussion, the group went on to the second part, which was the presentation of the software tool to help the registering of the Benefits Dependency Network elements and gathering expert opinions on the evolution of the application.

The software was shown with the data about a Benefits Dependency Network already loaded. The case loaded was the network from a case study published in the literature in (Caldeira et al., 2012). Then, to show the functionality of the software application in loading data for a new network, the presenter started with a blank case and loaded some of the elements of the network.

The feedback about the software tool was generally positive. The experts considered it is going in a good direction and gave some opinions on possible improvements.

The suggested improvements to the current state of the application were:

- For the financial benefits, create a functionality to sum all the expected benefits to get a total financial value from the prospected benefits. This will need to be studied further, as there is no linear way to have this calculation;
- The calculated values in the financial benefits should be reported to a moment in time, or to two moments in time;
- Have a list of the benefits grouped by type. The existing report lists all the benefits sorted by code;
- Have the possibility to export the tables to Excel, to build reports and analysis based on the data of a given network;
- Have a state of completion for the changes (enabling changes, business changes, IT enablers)

The session successfully ended after ninety minutes. The recording was stopped and this report was written.

After this session, the suggestion of changes to the software tool were taken into account and were implemented.

5. SOFTWARE TOOL – BMS (BENEFITS MANAGEMENT SYSTEM)

The existence of facilitating conditions, like the use of tools to support the Benefits Management process has been defined by some authors as potentially having a positive effect on both the intention to use and the actual use of these management practices (Ajzen, 1991; Hesselmann et al., 2015). Other authors have also pointed out the relevance of creating IT artifacts to assist the realization of benefits within the IS community. Hevner et al. (Hevner et al., 2004) explicitly state that:

> *"Organizations spend billions of dollars annually on IT, only too often to conclude that those dollars were wasted. This community would welcome effective artifacts that enable such problems to be addressed – constructs by which to think about them, models by which to represent and explore them, methods by which to analyze or optimize them, and instantiations that demonstrate how to affect them"* (Hevner et al., 2004).

The development of the first version of the BMS (Benefits Management System) to support the creation, manipulation and use of the Benefits Dependency Network has been completed to serve as a base for the subject experts on the Focus Group. For this first version, the base knowledge for the construction of the software was the description of the method presented by Peppard, Ward and Daniel (2007). This software tool, in its current version, allows the construction of the BDN, by aiding the registration of all the necessary data, namely the following:

- Investment Objectives
- Expected Business Benefits, including the classification into four different types (Financial, Quantifiable, Measurable or Observable) and, in the case of types Financial, Quantifiable or Measurable, their Units of Measuring.
- Necessary Business Changes
- Necessary Enabling Changes
- IS/IT Enablers

It is also possible to register the dependencies between the main elements of the BDN, namely the following dependencies:

- IT Enabler allows Enabling Change
- IT Enabler allows It Enabler
- Enabling Change allows Enabling Change
- Enabling Change allows Business Change
- Business Change allows Business Change
- Stakeholder is responsible for Enabling Change

- Stakeholder is responsible for Business Change
- Stakeholder is responsible for Business Benefit
- Enabling Change leads to Business Benefit
- IT Enabler allows Business Change
- Business Change leads to Business Benefit
- Business Benefit relates to Investment Objective

The BMS software tool developed in this scope is itself a deliverable of this research project, as it constitutes an enabler of the use of the agile approach to the Benefits Management methodology.

5.1. Technical specifications

The Class Diagram[3] on Figure 13 represents the data model created by the author to support the BMS software tool to manage the Benefits Dependency Network.

The Class Diagram shows the conceptual structure of the database, following the standards of the Unified Modelling Language (UML). From this Class Diagram, a database relational schema was created. (shown in Appendix A) and from that relational schema, a relational database was created in a Relational Database Management System (RDBMS) and the corresponding software application to manage the database was developed.

When creating the database to support the BMS software tool, some validations were implemented into the database itself, which are briefly described here:

- The primary keys of every main table (tables that derive from Classes in the UML Class Diagram and not from associations between classes) are all numbered sequences automatically generated by the RDBMS. These fields will not be visible to the users in the application.
- The referential integrity – ensuring that every foreign key corresponds at all times to a value in the primary key that it references, as defined in the theory of Relational Databases (Codd, 1970) – is implemented into the database, thus ensured by the RDBMS.

[3] UML Class Model: Standard Diagram of the Unified Modeling Language (UML) generally used to define the Data Model in Object-Oriented Software development. (Dennis, Wixom, & Tegarden, 2009).

- For each of the main data entities (classes) a three-character code was defined. These codes are a combination of one alphabetic uppercase character followed by a two-digit number. The idea is to create an easy model of referencing for each of the data elements. This rule has been widely used in published case studies, when creating Benefit Dependency Networks (Caldeira et al., 2012; Ward & Daniel, 2005, 2012). The format for these codes, which are mandatory, are ensured by the RDBMS, as the rules were inserted into the database itself. For example, the Business Benefits table has a code with the format B01, B02, etc., and the Investment Objectives have the codes O01, O02, etc. as explained in the following paragraph. The uniqueness of these values for a given intervention is also ensured by the database management system. The same code can (and probably will) exist in different interventions, but not allowed on the same intervention.
- Although the original proponents of the Benefits Management processes do not explicitly refer to a coding standard for the elements of a Benefits Dependency Network, the truth is, in most cases, the researchers and practitioners have been using some type of coding for these elements, as it is always easier to reference the elements by code than by name. Ward and Daniel (2012), although not specifically defining any kind of format for the codes, state that some code numbering is useful. In one example case they present in their book, about the food company, they use codes starting with specific letters for each element of the network, namely:
    - "I" – IS/IT Enablers
    - "E" – Enabling changes
    - "C" – Business Changes
    - "B" – Business Benefits
    - "O" – Investment Objectives
- In the development of the software tool for this research project, the same codes were used, so the SW tool will ensure, at the database level, that each of the elements has a code starting with the respective letter

assigned to that class of elements, followed by a two-digit number. These codes, as stated above, are ensured to be unique within each intervention, although they can be repeated in different interventions.

- The uniqueness (no repetition) of the names of each record is also ensured within the database management system.

The BMS software tool had a first version of the artifact created, following the Design Science research method used in the overall research project. It was then presented to a panel of experts in the scope of a focus group, to be validated and to be obtained, from those experts, opportunities for improvement for the next phases of the project. The suggestions raised in the referred focus group were overall implemented into the system, which is now described. Most suggestions were related to functionality that could be added to the tool without any major disruption, as the core base of the system had been built taking into account the necessary strong and flexible architectural structure to enable it to grow smoothly.

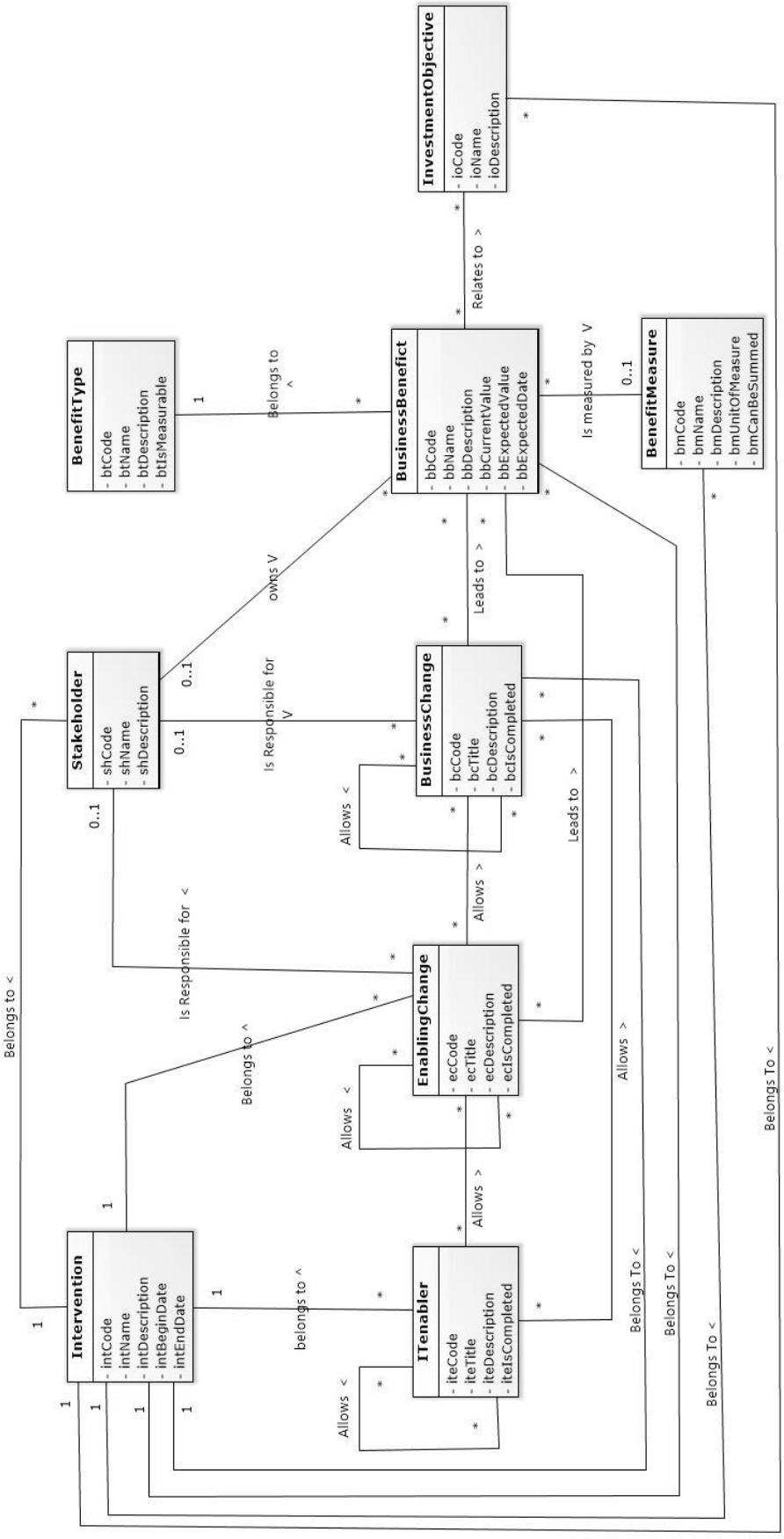


Figure 13: UML Class-Model for the Software Tool that supports the BDN
Created by the author

5.2. Brief description of the functionality

When the program starts up, the screen shows an option button that allows the user to choose in which intervention he/she wants to work. We can have many interventions loaded into the database, but there is, at each time, only one active for each user. Once chosen the intervention from a drop-down field (combo-box), a new screen is shown – it is the main menu of the software application.

Main Menu

This new screen is the tool's main menu. The menu is represented by an image of a Benefits Dependency Network, as shown in Figure 14. The idea of showing the main menu with an image of a Benefits Dependency Network is to help the user identify each functionality he/she will be accessing.

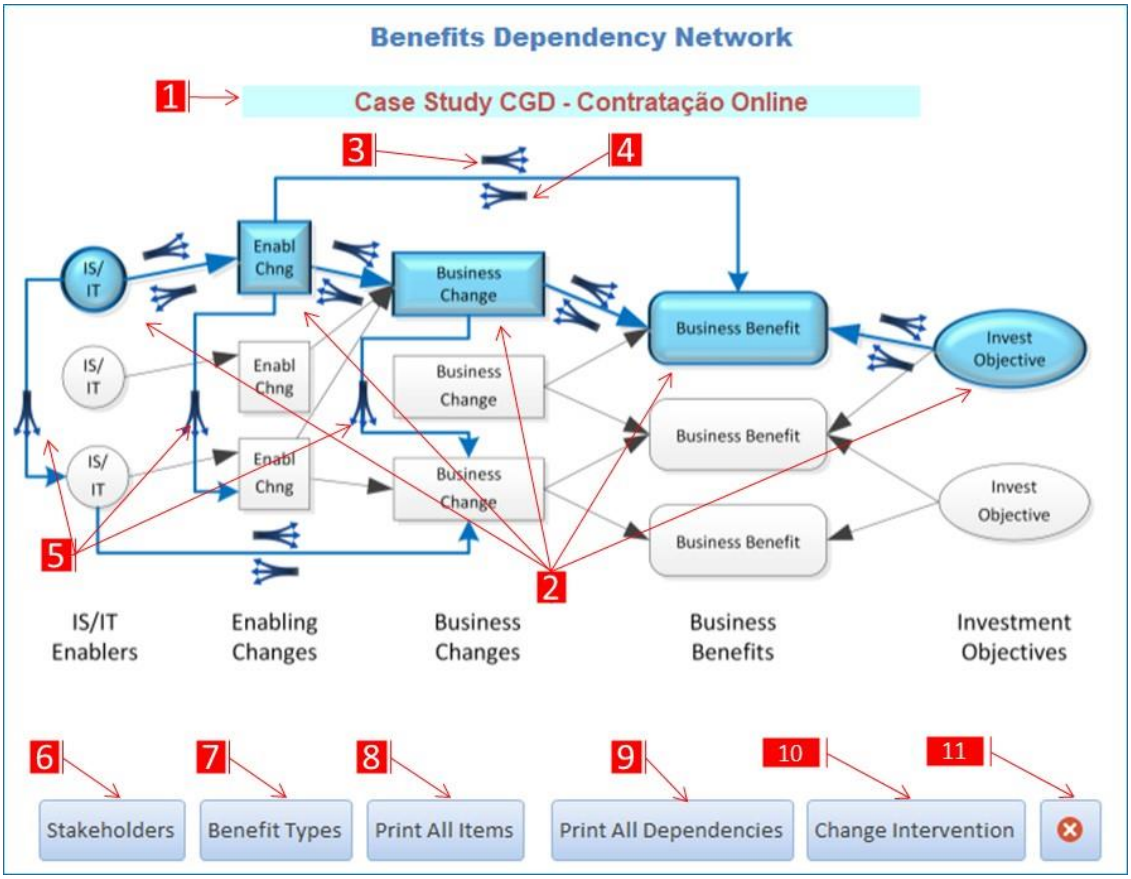


Figure 14: Main menu of the application to manage the Benefits Dependency Network
Created by the author

The labels on the image of the main menu in Figure 14 show the following:

1. The name of the active intervention.
2. Each of the shown areas correspond to a button that opens a form to create, read, change or delete a record of the respective part of the Benefits Management Network (IS/IT changes, Enabling Changes, Business Changes, Business Benefits or Investment Objectives)
3. Whenever this symbol appears on the menu, it contains a button that will open a screen with a master-detail form, in which the master corresponds to the beginning of the multi-arrow and the detail is to where the multi-arrows point. In this example in particular, the master-detail form will contain the Enabling changes and, for each of the enabling changes, the Business Benefits affected by it. As with the other form screens, it allows the normal data operations – Create, Read, Update and Delete.
4. In this case, similarly to number 3, the button opens a master-detail form screen showing, for each Business Benefit, the Enabling Changes that affect it.
5. The buttons signaled by the number 5 have a similar functionality of numbers 3 and 4, although with one particularity: in this case, it is a master-detail within the same item. For example, it represents the relationship between one IS/IT enabler and other IS/IT enablers, or between one Enabling Change and other Enabling Changes, or between one Business Change and other Business Changes. In the master-detail form, the system will filter automatically not to allow each master to relate to itself, as it does not make sense in the model, allowing only each record to be related to the others of the same type.
6. Access to the list of stakeholders for this intervention
7. This will take the user to the screen with the types of Benefits – which do not change – and allow access to a report on all the benefits by type.
8. This button will open a report showing all the items defined for the current intervention, in the following order:

a. List of Investment Objectives
b. List of Business Benefits
c. List of Business Changes
d. List of Enabling Changes
e. List of IS/IT Enablers

9. This button will open a report showing all the dependencies between items that were defined for the current intervention, in the following order:
    a. IS/IT Enabler allows other IS/IT Enablers
    b. IS/IT Enabler allows Business Changes
    c. IS/IT Enabler allows Enabling Changes
    d. Enabling Change allows to Business Changes
    e. Enabling Change leads to Business Benefits
    f. Business Change allows other Business Changes
    g. Business Change Leads to Business Benefits
    h. Business Benefits that are related to each Investment Objective
10. This button will open the first screen, allowing the user to activate a different intervention.
11. This button will quit the application.

Screen Forms

As mentioned above, the buttons labelled with the number "2" in Figure 14 will open electronic forms to manage the database records corresponding to each item. The forms are similar to each other in terms of image and functionality, although each having its own particularities.

When the button that corresponds to the Business Benefits is pressed, the Business Benefit screen form is opened, with the image as shown in Figure 15 bellow.

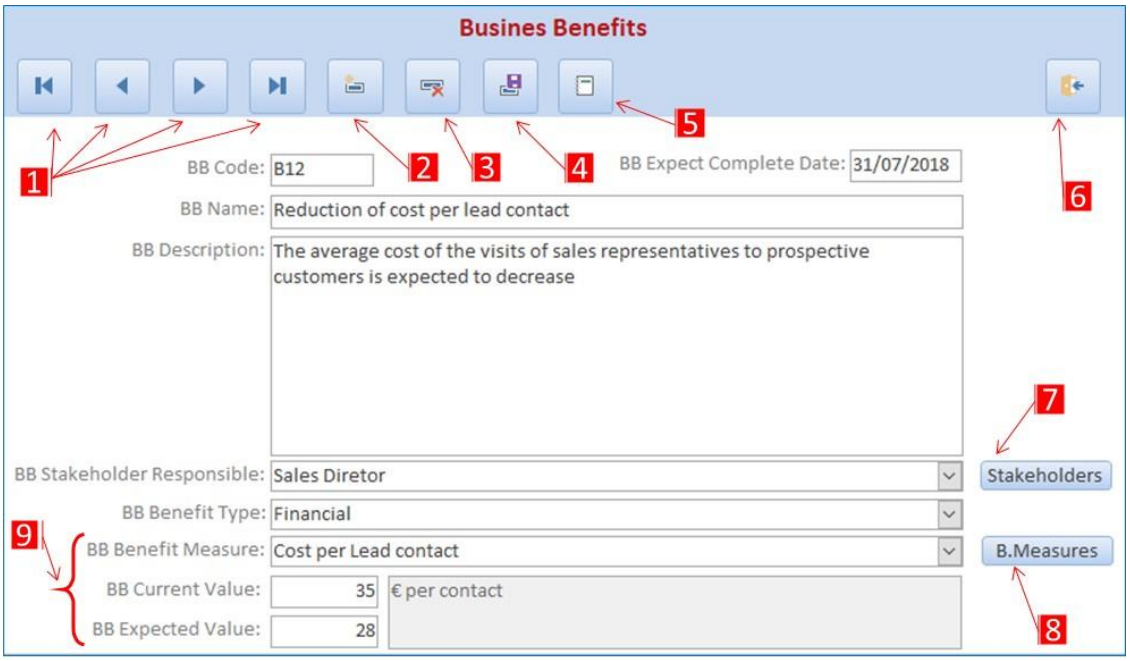


Figure 15: Screen to create/edit a Business Benefit
Created by the author

The main functions of this screen form are the following:

1. These are the record navigation buttons. The respective actions (from left to right) are “Go to First Record”; “Go to Previous Record”; “Go to Next Record”; “Go to Last Record”.

2. Pressing this button will position the form on a new record, to allow adding a new Business Benefit. It will also pre-fill the field “BB-Code” (Business Benefit Code) with the highest existing value plus one from the codes in the database for this intervention. To get this value, the system will run a programmed function called GetMyNextCode() which will take as parameters the name of the table and also the prefix used in the codes. The function will be used for all the forms of IS/IT changes, Enabling Changes, Business Changes, Business Benefits and Investment Objectives, in the respective screen forms. The return value for this function will be the next code number (current highest plus one) attached to the prefix for the element being added. The source code for this function is presented in appendix B.

3. Delete the current record.
4. Save the current record.
5. Produce a report with all the Business Benefits for the active intervention.
6. Close the screen form
7. List of stakeholders. For each Business Benefit (as well as for the business changes and enabling changes) a responsible stakeholder should be assigned. Whenever there is no stakeholder responsible, the stakeholder field will be highlighted in red, to emphasize this fact. The assignment of the stakeholder can be done by choosing from the combo-box. In case the desired stakeholder does not appear in the combo-box, this button opens a screen form to create a new stakeholder and, when returning from the stakeholders form, the one on the screen will be automatically chosen in the combo-box. The button can also be used to search a stakeholder or browse from the list and choose one, as the one active on the screen form will be returned to the combo-box.
8. List of the Benefit Measures. This functionality works exactly the same way as for the stakeholders.
9. When the Benefit Type is set to "Observable", it means, literally, that "*by the use of agreed criteria, specific individuals/groups will decide, based on their experience or judgement, to what extent the benefit has been realized*" (Ward & Daniel, 2012, p. 134). The consequence of this definition is that the benefit is not quantifiable, which means that everything on the right of the shown bracket will disappear from the screen.

On the screen forms for managing the necessary changes – IS/IT Enablers, Enabling Changes and Business Changes – a functionality was added after the first round of development, following the suggestions from the focus group, to have a state of execution. This state was defined with only three values, to make it as agile as possible. The values are: "Not Started"; "On Going"; and "Done". On the screen forms, these states were presented with tree icons, as shown in Figure 16.

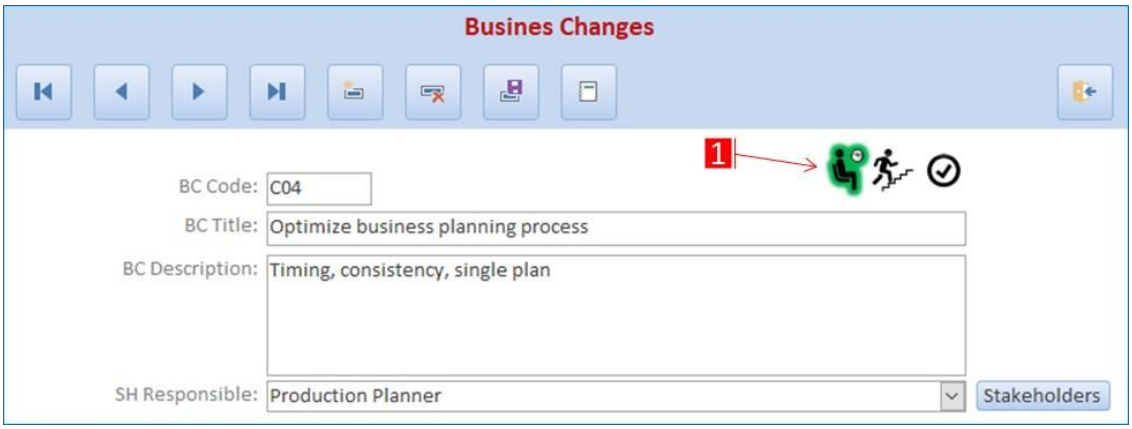


Figure 16: Screen to create/edit a Business Change
Created by the author

The icons signalled by the number 1 represent the state of the active record, in this case waiting to be started. This icon has a button associated which, when pressed, toggles between the states, storing the new state into the database and showing it on the screen by highlighting it in green.

6. CASE STUDY

As stated above in this document, when describing the research strategy, a case study is an adequate method to evaluate an artifact in the validation phase of a design science research project (Hevner et al., 2004), and it was the method chosen in the scope of the present research. This case study was conducted in a Portuguese bank, one of the largest financial institutions in the country.

The case study took place during the months of August and September, preceded by two meetings in July to present the Benefits Management methodology and to decide on the intervention and the team that would be performing it. All the meetings were held in the bank facilities.

The first meeting took place on the 6th of July. The attendees, apart from the researcher, were the Chief Information Officer (CIO), a senior director of the Information Systems Department, and Associate Director from the Quality & Organizational Control Department, and two elements of the Business Cases Group, part of the Quality & Organizational Control Department. In this meeting, the research project was presented, along with an overview of the design science research methodology and the Benefits Management process for Information Systems investment interventions. The main objective of this meeting was to obtain the agreement from the CIO to perform a research study within this organization. The agreement was obtained, as the organization is very open to cooperation with Universities and research institutions. A new meeting was agreed for a later period, as the institution would discuss internally to choose a suitable intervention where the Benefits Management process could better be used as a case study.

The second meeting took place on the 9th of August, with the presence of some of the attendees of the first meeting, namely the Associate Director from the Quality & Organizational Control Department and one member of his team. Two other members of the Quality & Organizational Control Department also joined the meeting. Another addition to the meeting attendees was a Director from the Marketing Department, responsible for the Direct Banking services. This Director was to be the main stakeholder for the intervention to be used in the case study. The methodology was again presented to the new attendees, as they would be the ones to decide on the intervention to be studied. There were two possible interventions, and the one chosen was a project called

"***Contratação Online***" (Online Acquisition). A new meeting was scheduled for later, on the 11th of August, this time to start the study of the intervention considering the Benefits Management process.

6.1. Context – Business Drivers

In a context of falling operating margins in the financial sector in the aftermath of the financial crises started in 2008, the banks are looking at new ways to enlarge their customer bases and increase the average return per customer. According to the International Monetary Fund, in its Global Financial Stability Report published in October 2016, "*although most advanced economy's bank balance sheets are robust, sustainable profitability is weak, reflecting unresolved legacy problems and bank business model challenges*" (IMF, 2016, p. 1).

The bank where the case study was conducted had decided, among other actions, to close a significant number of local branches, thus having an enormous reduction in the points of contact with the clients and prospects. On the other hand, they need to catch up with its competitors in the self-service areas, in which they are falling behind.

Management has three main drivers that lead to the intervention targeted by the present case study:

- A need to improve overall rentability to counter the decrease in margins
- Respond to the planned reduction of branches without lowering contact with the customers
- Catch-up with the competitors on the self-service and process dematerialization arena.

Considering the above context and drivers for the intervention under study, the researcher questioned the sponsor of the intervention as to the importance of the intervention to the current business of the bank and for its future business. To both questions, the answer was unmistakably "high importance". Using the Investment Portfolio matrix developed by Ward and Peppard (2002), these answers leads to the classification of the intervention as **Strategic**, as shown in Figure 17 bellow.

Figure 17: IS/IT investment portfolio Matrix
Source: (Ward & Daniel, 2012, p. 50; Ward & Peppard, 2002, p. 301)

The gathering of the information to write this case study was conducted in four separate meetings, each with a duration of about ninety minutes, held on the 11th, 17th, 21st and 25th of August. The attendees from the financial institution to the data gathering meetings were:

- the Marketing Director;
- a coordinator of the Non-Presence Channels Unit of the Marketing Department;
- a Global Investments Management coordinator from the Shared Services Department;
- a coordinator of the Project Portfolio Management from the Quality and Organization Department;
- one technician from the Quality and Organization Department;
- one technician from the Procurement & Shared Services Department.

Not everyone was present at all the meetings, but a minimum of four attendees were always in the meeting room.

The meetings were held as open informal discussions, in which the researcher was acting as a moderator. There was no recording and the data was loaded directly into the software tool, which helped organize the information as it was collected. The method used followed the one prescribed to write requirements and user-stories in Agile Methods, presented by Mike Cohn (2004).

Following the Agile way of *trawling* (Cohn, 2004), the participants went through the elements of the network without worrying about any order or dependencies, raising each element and then assigning it a type and its elements – IS/IT Enablers, Enabling Changes, Business Changes, Business Benefits and Investment Objectives.

The use of the software tool proved very helpful in the writing of the elements of the Benefits Dependency Network, as the data was immediately organized, and the elements were structured and documented. Without the software tool, all the data gathered would have to be later organized to be checked for missing information and registered.

6.2. The Benefits Dependency Network for the Case Study

6.2.1. List of Network Elements

The elements of the Benefits Dependency Network and their respective dependencies will now be presented and described in an understandable order, without regard to the order they were created and registered in the software tool.

Investment Objectives

There are three objectives for the intervention under study, according to the team. They are the following:

- **O01 – Increase Sales Volume**

  By adding a new sales channel for some products, an increase can be obtained in the total sales volume

- **O02 – Maintain or increase client proximity**

  Respond to the planned reduction of the number of branches and still maintain or even increase the proximity and involvement with the client.

- **O03 – Improve customer experience**

  Reduce procedural and bureaucratic complexity in the relations with our clients

- **O04 – Reduce Costs**

  At this stage of the economy, all the financial institutions have an objective to reduce operational costs. This cost reduction objective is present in every intervention.

These objectives as originally described in Portuguese in the software tool are presented in Appendix C, in a report extracted from the software tool.

Business Benefits

The objectives above defined, when reached, will allow the organization, according to the analysis team, to obtain a set of business benefits here described:

- **B01 – Increase in the value of Banking Product in Personal Loans**

  Increase in the amount charged on commissions on personal credit products and increase in their financial margin.

  It is a financial benefit, measured as the total financial value in Euros. The current value is 477.000€ and the expected value of this benefit one year after the operation begins is 525.000€.

  The rational for calculating the expected value was the following: The bank has a market-share of 8,8% for this product, which is not in line with the bank's position in the market. The objective is to increase 10% in the contracting value, corresponding to about 20 million Euros. After the first year of operation, they forecast to have a total bank product value of 525.000€ in this product. As a reference for this calculation, it was considered the performance of the activation of credit cards sold by the non-face-to-face channels, which account for 20 to 25% of all the activated credit cards.

  The stakeholder responsible for this benefit is the Direct Banking Unit Coordinator.

- **B02 – Increase in net interest income for LDN products**

Increase in the net margin for Negotiated Overdraft Limit products, i.e., negative value for the account balance contracted by the clients. This product is called LDN.

It is a financial benefit, measured as the total financial value in Euros. The current value is 65.500€ and the expected value of this benefit one year after the operation begins is 72.000€.

The rational for calculating the expected value was the following: 50% of the bank's customers have their salaries deposited in their bank's account, but only 20% have activated the LDN (negotiated overdraft limit). An increase in 10% of this numbers, which is considered a conservative scenario, corresponding to 5000 new operations, will lead to a total bank product value of 72.000€ in this product. As a reference for this calculation, it was considered the performance of the activation of credit cards sold by the non-face-to-face channels, which account for 20 to 25% of all the activated credit cards.

The stakeholder responsible for this benefit is the Direct Banking Unit Coordinator.

- **B03 – Increase in sales commission on non-financial insurance.**

  Increase commissions charged on the sale of non-financial insurance.

  It is a financial benefit, measured as the total financial value in Euros. The current value is 118.000€ and the expected value of this benefit one year after the operation begins is 130.000€.

  The rational for calculating the expected value was the following: The bank has a market-share of 13% for this product, which is not in line with the bank's position in the market. The objective is to increase 10% in the contracting value, corresponding to about 1,6 million Euros. After the first year of operation, they forecast to have a total bank product value of 130.000€ in this product. As a reference for this calculation, it was considered the performance of the activation of credit cards sold by the non-face-to-face channels, which account for 20 to 25% of all the activated credit cards.

  The stakeholder responsible for this benefit is the Direct Banking Unit Coordinator.

- **B04 – Increase in sales commission for new financial assets accounts.**

  By way of contracting a higher number of accounts of financial assets, we will have an increase of the commissions charged.

  It is a financial benefit, measured as the total financial value in Euros. The current value is 61.800€ and the expected value of this benefit one year after the operation begins is 77.000€.

  The rational for calculating the expected value was the following: The proportion of active (private) customers holding an active investment account is 7%, while the national banking average is 18%. This bank's digital penetration at the level of Investment Accounts (Digital Investment Customers / Total Investment Customers) is 44%, while the national average is 70%. As a reference must be considered the performance of CGD (management of 18,000 customers) in the 2016 OTRV, in which 610,000€ were placed. For an increase scenario of 150,000 (highly conservative) and considering only bi-annual OTRV emissions, about 77,000€ of commissions are expected to be made at the end of the first year.

  The stakeholder responsible for this benefit is the Direct Banking Unit Coordinator.

- **B05 – Reduction of cost of physical paper archives.**

  The physical paper documents currently collected at the counters will no longer exist with the new processes that will be performed online, thus reducing the paper storage costs.

  The current archive of physical paper processes has a calculated cost attached. Thus, this is a measurable benefit, measured as a financial value in Euros, as it is currently not possible to estimate how much performance will improve when the changes are completed.

  The stakeholder responsible for this benefit is the Operations and Quality Department Manager.

- **B06 – Reduction of resources associated with the business process.**

  By allocating less human and material resources to the business process associated with the contracting of the products in the scope of this investment

(fixed costs of direct contact with the clients), these resources can be reused in other processes.

This is a measurable benefit and the metric value used in this calculation is "Cost-to-Serve", measured in Euros per process. It is currently not possible to estimate how much performance will improve when the changes are completed.

The stakeholder responsible for this benefit is the Direct Banking Unit Coordinator.

- **B07 – Reduction of the customer churn rate caused by the planned closing of branches.**

  The current downward trend of bank branches is likely to have negative effect on the customer churn rate. This project should help reduce that effect by maintaining a digital proximity with the customers. This contribution can be measured through a questionnaire at the end of one year of project use.

  This is a measurable benefit as, although the current customer churn rate is known by the organization, there is no knowledge about the actual effect of the closing of bank branches will have on that rate, so it is not possible to anticipate the contribution of the investment under study will have in attenuating that effect. According to the team, after one year of operation of the new online acquisition processes, an inquiry can be conducted to the customers that bought a product through the new channels, to find out whether this new channel influenced their staying decision. The unit of measure is the customer churn rate, measured in percentage (number of clients that abandoned in one year over the number of total active clients).

  The stakeholder responsible for this benefit is the Direct Banking Unit Coordinator.

These Business Benefits, as originally described in Portuguese in the software tool, are presented in Appendix D, in a report extracted from the software tool.

Business Changes

To attain the business benefits declared above with the intervention under study, some changes must be made to the business processes, i.e., the way business is conducted. The work group declared the following changes to be made to the business processes to reach the desired business benefits:

- **C01 – Part of acquisition of Personal Credit products will be made online.**

  The client will be able to conclude a purchase of a Personal Credit by simply accessing the digital channel in either web application or mobile application.

  The stakeholder responsible to ensure this process change is the Direct Banking Unit Coordinator

- **C02 – Part of acquisition of Non-Financial Insurance products will be made online.**

  The client will be able to conclude a purchase of a Non-Financial Insurance by simply accessing the digital channel in either web application or mobile application.

  The stakeholder responsible to ensure this process change is the Direct Banking Unit Coordinator

- **C03 – Part of acquisition of LDN products will be made online.**

  The client will be able to conclude a purchase of a Negotiated Overdraft Limit product by simply accessing the digital channel in either web application or mobile application.

  The stakeholder responsible to ensure this process change is the Direct Banking Unit Coordinator

- **C04 – The opening of a new Financial Assets Account of will be made online.**

  The client will be able to open a new Financial Assets Account by simply accessing the digital channel in either web application or mobile application.

  The stakeholder responsible to ensure this process change is the Direct Banking Unit Coordinator

- **C05 – Stop collecting physical paper copies of procedural documentation.**

  Currently, in each credit process, paper documents are collected, which are later sent to the customer's process physical files and subsequently sent to the central archive. This represents a significant cost. Online acquisition no longer collects physical documents, which brings a considerable processual simplification and significant savings.

These Changes, as originally described in Portuguese in the software tool, are presented in Appendix E, in a report extracted from the software tool.

Enabling Changes

Business changes are changes in business processes, in the way the everyday business is conducted. On the other hand, some one-time-off changes have to be performed to allow the business processes to be conducted in the new ways, i.e., the changes that will enable new business processes. These changes are referred to by the authors of the Cranfield Benefits Management process as Enabling Changes. The Enabling Changes raised by the team were the following:

- **E01 – Change of contract drafts to accommodate online acquisition.**

  The drafts of service contracts will have to be amended to include online acquisition clauses.

  The stakeholder responsible to ensure this enabling change is a person still to be allocated from the Legal Department.

- **E02 – Change internal operating rules to include online acquisition.**

  The internal working process rules will have to be modified in order to include the elements of online acquisition.

  The stakeholder responsible to ensure this enabling change is the responsible from the Quality & Organization Department.

- **E03 – Prepare communication materials for online acquisition.**

  Design the pieces of communication for the launch of new online acquisition features.

The stakeholder responsible to ensure this enabling change is the responsible from the Image & Communication Department.

These Enabling Changes (one-time changes), as originally described in Portuguese in the software tool, are presented in Appendix F, in a report extracted from the software tool.

IS/IT Enablers

More and more, nowadays, when organizations put in place change programmes, business developments and strategic initiatives, these have to be supported on IS/IT projects and initiatives.

> *"IT is one of the enablers of change and many organizations have taken the stance that, apart from infrastructure projects, there are now really no IS/IT projects per se – there are only change projects that have significant IS/IT components."* (Ward & Daniel, 2005, p. 103).

The intervention targeted by this study has an some IS/IT components needed to enable the operationalization of the new business processes, and thus to obtain the expected business benefits. The IS/IT enablers raised by the team are here described.

- **I01 – Perform the changes in the workflow platform Agile to gather the client file.**

  The workflow platform in use in the bank, called "Agile", has to undergo some development. This is needed to allow the workflow system to be able to load the client file information, as it does not currently have that feature.

- **I02 – Creation of a new input channel on the Agile platform**

  The workflow platform Agile has to undergo development to be able to accept a new input channel, namely to be able to read input from the online banking system.

- **I03 – Change the front end of the Online Banking platform Caixadireta Online**

  The online banking system ("*CaixaDireta Online*") frontend will have to be changed to include the sale of the new products. There is the need to include an

authorization workflow whenever the account has more than one account holder.

These IS/IT Enabling actions, as originally described in Portuguese in the software tool, are presented in Appendix G, in a report extracted from the software tool.

6.2.2. List of Dependencies

In this section, the dependencies between the elements of the Benefits Dependency Network will be described, as they were defined by the work group. Only the existing dependencies will be presented.

IT Enabler to Business Changes (I → C)

For each IT Enabler, the list of Business Changes which depend on it are presented

I01 Perform the changes in the workflow platform Agile to gather the client file
- └> C01 Part of acquisition of Personal Credit products will be made online
- └> C03 Part of acquisition of LDN products will be made online
- └> C05 Stop collecting physical paper copies of procedural documentation

I02 Creation of a new input channel on the Agile platform
- └> C01 Part of acquisition of Personal Credit products will be made online
- └> C03 Part of acquisition of LDN products will be made online
- └> C05 Stop collecting physical paper copies of procedural documentation

I03 Change the front end of the Online Banking platform Caixadireta Online
- └> C01 Part of acquisition of Personal Credit products will be made online
- └> C02 Part of acquisition of Non-Financial Insurance products will be made online
- └> C03 Part of acquisition of LDN products will be made online
- └> C04 The opening of a new Financial Assets Account of will be made online
- └> C05 Stop collecting physical paper copies of procedural documentation

These dependencies shown from each of the IS/IT Enabler (coded as I01 to I03), as originally described in Portuguese in the software tool, are presented in Appendix H1, in a report directly extracted from the software tool.

In the software tool, it is also possible to visualize and add or update the dependencies from the point of view of the Business changes, i.e. for each Business Change, to visualize and add or update the IS/IT Enablers that allow them to be operationalized. Thus, for each Business Change, the following IS/IT Enablers were identified by the team:

C01 Part of acquisition of Personal Credit products will be made online

- I01 Perform the changes in the workflow platform Agile to gather the client file
- I02 Creation of a new input channel on the Agile platform
- I03 Change the front end of the Online Banking platform Caixadireta Online

C02 Part of acquisition of Non-Financial Insurance products will be made online

- I03 Change the front end of the Online Banking platform Caixadireta Online

C03 Part of acquisition of LDN products will be made online

- I01 Perform the changes in the workflow platform Agile to gather the client file
- I02 Creation of a new input channel on the Agile platform
- I03 Change the front end of the Online Banking platform Caixadireta Online

C04 The opening of a new Financial Assets Account of will be made online

- I03 Change the front end of the Online Banking platform Caixadireta Online

C05 Stop collecting physical paper copies of procedural documentation

- I01 Perform the changes in the workflow platform Agile to gather the client file

- ↼ I02 Creation of a new input channel on the Agile platform
- ↼ I03 Change the front end of the Online Banking platform Caixadireta Online

These dependencies shown from each of the Business Changes (coded as C01 to C05), as originally described in Portuguese in the software tool, are presented in Appendix H2, in a report directly extracted from the software tool.

Enabling Changes to Business Changes (E → C)

We now present the Business Changes that depend on each of the Enabling Changes, i.e., the permanent changes on the work processes that, to be operationalized, need each of the one-time-off changes to be performed.

E01 Change of contract drafts to accommodate online acquisition
- └> C01 Part of acquisition of Personal Credit products will be made online
- └> C02 Part of acquisition of Non-Financial Insurance products will be made online
- └> C03 Part of acquisition of LDN products will be made online
- └> C04 The opening of a new Financial Assets Account of will be made online
- └> C05 Stop collecting physical paper copies of procedural documentation

E02 Change internal operating rules to include online acquisition
- └> C01 Part of acquisition of Personal Credit products will be made online
- └> C02 Part of acquisition of Non-Financial Insurance products will be made online
- └> C03 Part of acquisition of LDN products will be made online
- └> C04 The opening of a new Financial Assets Account of will be made online
- └> C05 Stop collecting physical paper copies of procedural documentation

E03 Prepare communication materials for online acquisition
- └> C01 Part of acquisition of Personal Credit products will be made online
- └> C02 Part of acquisition of Non-Financial Insurance products will be made online

- C03 Part of acquisition of LDN products will be made online
- C04 The opening of a new Financial Assets Account of will be made online
- C05 Stop collecting physical paper copies of procedural documentation

These dependencies shown from each of the Enabling Changes (coded as E01 to E03), as originally described in Portuguese in the software tool, are presented in Appendix I1, in a report directly extracted from the software tool.

In the software tool, it is also possible to visualize and add or update the dependencies from the point of view of the Business changes, i.e. for each Business Change, to visualize and add or update the Enabling Changes that allow them to be operationalized. Thus, for each Business Change, the following Enabling Changes were identified by the team:

C01 Part of acquisition of Personal Credit products will be made online
- E01 Change of contract drafts to accommodate online acquisition
- E02 Change internal operating rules to include online acquisition
- E03 Prepare communication materials for online acquisition

C02 Part of acquisition of Non-Financial Insurance products will be made online
- E01 Change of contract drafts to accommodate online acquisition
- E02 Change internal operating rules to include online acquisition
- E03 Prepare communication materials for online acquisition

C03 Part of acquisition of LDN products will be made online
- E01 Change of contract drafts to accommodate online acquisition
- E02 Change internal operating rules to include online acquisition
- E03 Prepare communication materials for online acquisition

C04 The opening of a new Financial Assets Account of will be made online
- E01 Change of contract drafts to accommodate online acquisition
- E02 Change internal operating rules to include online acquisition

- ↑ E03 Prepare communication materials for online acquisition

C05 Stop collecting physical paper copies of procedural documentation

- ↑ E01 Change of contract drafts to accommodate online acquisition
- ↑ E02 Change internal operating rules to include online acquisition

These dependencies shown from each of the Business Change (coded as C01 to C05), as originally described in Portuguese in the software tool, are presented in Appendix I2, in a report directly extracted from the software tool.

Business Changes to Business Benefits (C → B)

We now present the Business Benefits identified by the team for the intervention under study, that depend on each of the Business Changes.

C01 Part of acquisition of Personal Credit products will be made online

- ↓ B01 Increase in the value of Banking Product in Personal Loans
- ↓ B05 Reduction of cost of physical paper archives
- ↓ B06 Reduction of resources associated with the business process
- ↓ B07 Reduction of the customer churn rate caused by the planned closing of branches

C02 Part of acquisition of Non-Financial Insurance products will be made online

- ↓ B03 Increase in sales commission on non-financial insurance
- ↓ B05 Reduction of cost of physical paper archives
- ↓ B06 Reduction of resources associated with the business process
- ↓ B07 Reduction of the customer churn rate caused by the planned closing of branches

C03 Part of acquisition of LDN products will be made online

- ↓ B02 Increase in net interest income for LDN products
- ↓ B05 Reduction of cost of physical paper archives
- ↓ B06 Reduction of resources associated with the business process

└> B07 Reduction of the customer churn rate caused by the planned closing of branches

C04 The opening of a new Financial Assets Account of will be made online

└> B04 Increase in sales commission for new financial assets accounts

└> B05 Reduction of cost of physical paper archives

└> B06 Reduction of resources associated with the business process

└> B07 Reduction of the customer churn rate caused by the planned closing of branches

C05 The opening of a new Financial Assets Account of will be made online

└> B05 Reduction of cost of physical paper archives

└> B06 Reduction of resources associated with the business process

These dependencies shown from each of the Business Change (coded as C01 to C05), to the expected Business Benefits as originally described in Portuguese in the software tool, are presented in Appendix J1, in a report directly extracted from the software tool.

In the software tool, it is also possible to visualize and add or update the dependencies from the point of view of the Business Benefits, i.e. for each expected Business Benefit, to visualize and add or update the Business Changes that allow them to be attained. Thus, for each of the expected Business Benefits, the following Business Changes have to be operationalized:

B01 Increase in the value of Banking Product in Personal Loans

↵ C01 Part of acquisition of Personal Credit products will be made online

B02 Increase in net interest income for LDN products

↵ C03 Part of acquisition of LDN products will be made online

B03 Increase in sales commission on non-financial insurance

↵ C02 Part of acquisition of Non-Financial Insurance products will be made online

B04 Increase in sales commission for new financial assets accounts

- C04 The opening of a new Financial Assets Account of will be made online

B05 Reduction of cost of physical paper archives

- C01 Part of acquisition of Personal Credit products will be made online
- C02 Part of acquisition of Non-Financial Insurance products will be made online
- C03 Part of acquisition of LDN products will be made online
- C04 The opening of a new Financial Assets Account of will be made online
- C05 Stop collecting physical paper copies of procedural documentation

B06 Reduction of resources associated with the business process

- C01 Part of acquisition of Personal Credit products will be made online
- C02 Part of acquisition of Non-Financial Insurance products will be made online
- C03 Part of acquisition of LDN products will be made online
- C04 The opening of a new Financial Assets Account of will be made online
- C05 Stop collecting physical paper copies of procedural documentation

B07 Reduction of the customer churn rate caused by the planned closing of branches

- C01 Part of acquisition of Personal Credit products will be made online
- C02 Part of acquisition of Non-Financial Insurance products will be made online
- C03 Part of acquisition of LDN products will be made online
- C04 The opening of a new Financial Assets Account of will be made online

These dependencies shown from each Business Benefit (coded as B01 to B07), to the business changes that affect it, as originally described in Portuguese in the software tool, are presented in Appendix J2, in a report directly extracted from the software tool.

Investment Objectives to Business Benefits (O → B)

For each of the investment objectives of the intervention under study, the business benefits they should entail, as declared by the team, are now listed.

O01 Increase Sales Volume
- └> B01 Increase in the value of Banking Product in Personal Loans
- └> B02 Increase in net interest income for LDN products
- └> B03 Increase in sales commission on non-financial insurance
- └> B04 Increase in sales commission for new financial assets accounts

O02 Maintain or increase client proximity
- └> B01 Increase in the value of Banking Product in Personal Loans
- └> B02 Increase in net interest income for LDN products
- └> B03 Increase in sales commission on non-financial insurance
- └> B04 Increase in sales commission for new financial assets accounts
- └> B07 Reduction of the customer churn rate caused by the planned closing of branches

O03 Improve customer experience
- └> B05 Reduction of cost of physical paper archives
- └> B07 Reduction of the customer churn rate caused by the planned closing of branches

These dependencies shown from each Investment Objective (coded as O01 to O03), to the benefits associated with them, as originally described in Portuguese in the software tool, are presented in Appendix K1, in a report directly extracted from the software tool.

It is also possible, using the software tool, to see or change the Investment Objectives that lead to each of the expected Business Benefits.

B01 Increase in the value of Banking Product in Personal Loans
- ↑ O01 Increase Sales Volume
- ↑ O02 Maintain or increase client proximity

B02 Increase in net interest income for LDN products

- O01 Increase Sales Volume
- O02 Maintain or increase client proximity

B03 Increase in sales commission on non-financial insurance

- O01 Increase Sales Volume
- O02 Maintain or increase client proximity

B04 Increase in sales commission for new financial assets accounts

- O01 Increase Sales Volume
- O02 Maintain or increase client proximity

B05 Reduction of cost of physical paper archives

- O03 Improve customer experience

B07 Reduction of the customer churn rate caused by the planned closing of branches

- O02 Maintain or increase client proximity
- O03 Improve customer experience

These dependencies shown from each Business Benefit (coded as B01 to B07), to the Investment Objectives that lead to them, as originally described in Portuguese in the software tool, are presented in Appendix K2, in a report directly extracted from the software tool.

6.2.3. Benefits Dependency Network

During the four workshops that took place in the Bank's premises, all the elements necessary to apply the Benefits Management methodology defined in the University of Cranfield, were defined and documented. Thus, the team was in possession of all the necessary information to create the graphic Benefits Dependency Network, which is presented in Figure 18 bellow.

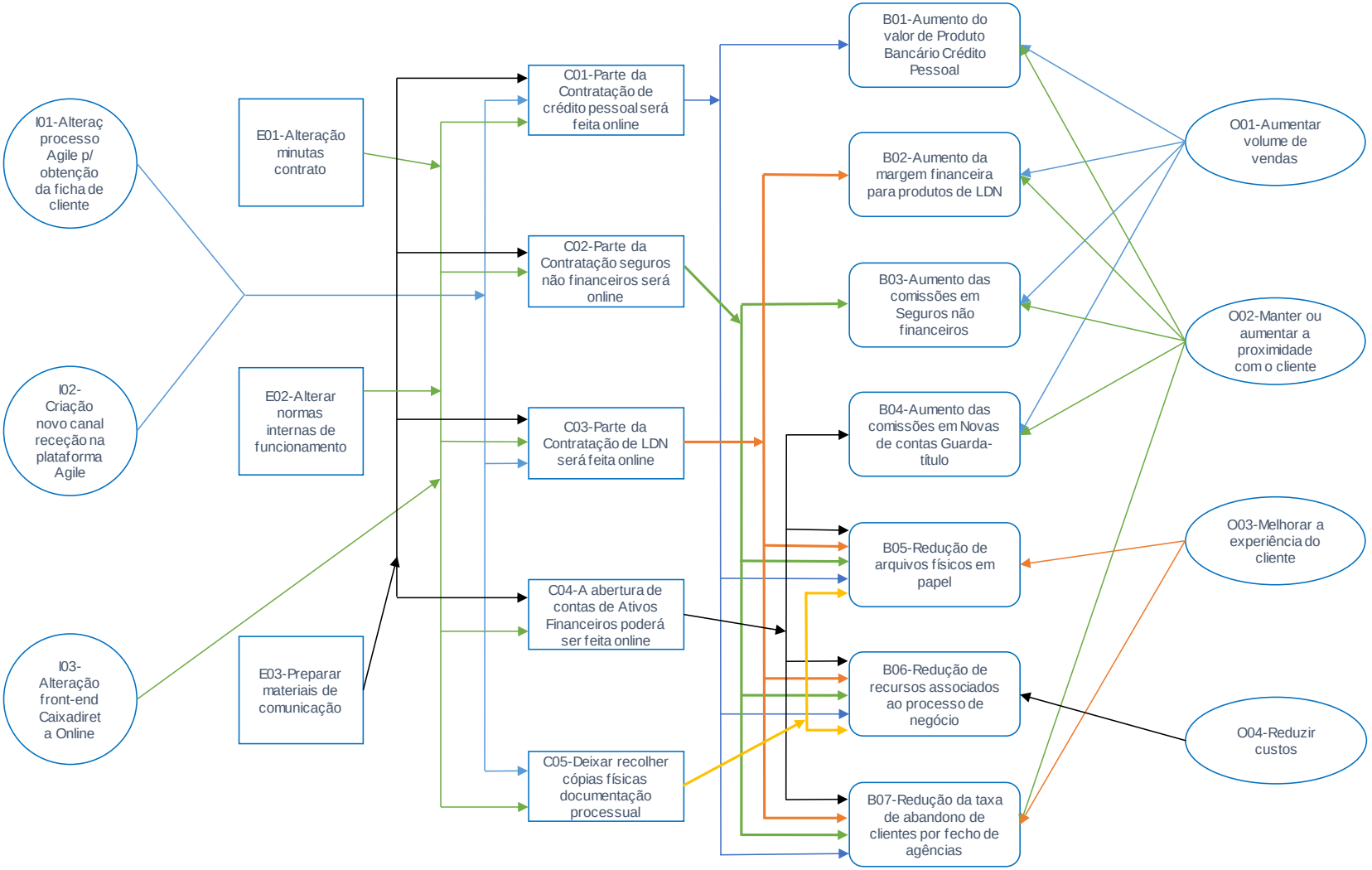


Figure 18: Benefits Dependency Network for the Case Study "Online Acquisition
Source: Created by the author

The Benefits Dependency Network shown in Figure 18 gives a global overview of the elements of the intervention and the dependencies between them. Although it allows an overall birds-eye view, it does not preclude a deeper view into each of the elements to have a real understanding of the intervention.

6.3. Case Study Analysis

To research the results of applying the Agile Approach to Benefits Management to the Case Study of the Financial Institution under analysis, a meeting was held on September 12 on the organization's premises. This meeting was attended by the elements that participated in the case study, along with the researcher. The attendees to the meeting were two elements of the Business Cases Group, part of the Quality & Organizational Control Department, another senior member of the Quality & Organizational Control Department, working on the area of the Branch Network, and the Coordinator of the Non-Face-to-Face Channels Unit, from the Marketing Department.

In the meeting request, the attendees were informed that the agenda would be to obtain their feedback in relation to the following points:

1. About the Cranfield method for Information Systems Benefits Management:
    a. Its utility
    b. Ease of use (usability)
    c. Suggestions for improvement
2. About the Agile approach to information collection, by comparison with the traditional more structured waterfall-like process
3. About the relevance of using a software tool to store and manage the elements of the network and their interdependencies
4. About the ways to visualize the elements and their dependencies
    a. Reports from the software tool
    b. Network Diagram
5. Other comments and/or improvement suggestions.

The attendees were asked and gave their agreement for the audio recording of the meeting, so the meeting was recorded with a digital audio recorder. The results of this meeting, obtained from analysing the recorded remarks of the meeting attendees will now be presented.

6.3.1. Utility of the Benefits Management Process and its ease of use

The researcher opened the discussion with this subject by emphasising that this method does not intend to replace other management processes, like Programme and Project Portfolio Management, Change Management, Investment Appraisal, Risk Management, Project Management or System Development methodologies. Rather it should be used in complement of these methodologies, covering the gap that exists between them, as none of them focus specifically on identifying and managing the business benefits that arise from the investments.

The researcher also reminded that this method is based on the premises that benefits to the organization do not appear just because an investment was made in IS/IT in the organization and to realize the benefits there are always changes that have to be made within the organization. What this method intends is to make explicit the dependencies that exist between the changes that have to be made and the expected business benefits.

The researcher then referred the Harvard Business School framework already mentioned above in this document, "*Competes versus Qualifiers*": they classify as *Qualifier* an investment that only enables the company to get to the starting line of the race, whilst Compete is an investment that will give the company a potential edge over its competitors. To exemplify this notion, the example given was a Customer Relationship Management (CRM) system: nowadays, any middle-sized to large organization must have a CRM, otherwise it will not even qualify to be in its market. However, just having a CRM will not necessarily enable it to compete for the win, meaning to obtain a sustainable advantage over its competitors. What might differentiate one organization from its competitors to gain an advantage is the way it uses the CRM, the changes it implements in its working processes to better exploit the system. What the Benefits Management methodology brings is the possibility to make explicit that there are dependency links between the changes that need to be made to the organization and its working processes and the benefits the organization expects to achieve with the

investment. The researcher also mentioned data provided by Ward & Daniel (2012), which states that "the level of complementary investment required to fully exploit IS/IT assets is often five times the cost of the technology itself" (Ward & Daniel, 2012, p. 128). At this point, one of the participants intervened giving her concordance with these numbers and adding that the changing costs are frequently overlooked by organizations. The researcher emphasised the fact that the Benefits Management methodology intends to emphasise this fact, by making explicit the dependencies between the changes that have to be made within the organization and the expected benefits obtained from the investment.

At this point, the researcher asked for the opinions of the participants about the utility of the Cranfield method of Benefits management, considering the experience of the case being studied.

The first attendee to give her opinion was a senior manager from the Business Cases Group, part of the Quality & Organizational Control Department. According to her, the highest added value from this methodology is to bring a component that tries to quantify everything that has real impact on the project and the work that has to be performed on the organization to reach its objectives, which has a tendency of not being normally recognized. She mentioned that when the organizations look at a project to analyze its cost, they are concerned about the externally contracted extra costs, i.e., not with the costs incurred by the work internal people will have to perform to make the necessary changes. But the externally contracted costs are actually only one of the cost items of the whole project costs. This benefits management methodology somehow helps to have this kind of relationship. In the perspective of the organization´s management, she thinks it is interesting to, along with the analysis of the externally contracted costs, never lose the global sight of all the effort that has to be incurred to make the changes to the organizations.

The next person to present his view on the matter was a senior member of the Quality & Organizational Control Department, working on the area of the Branch Network. He complemented what the previous attendee was saying by adding that one of the values added by this method was to force the group to think about the variables needed for the development of the project ant its costs. Even if we do not go into the full details, at least we are led to raise some of the components of the project ant its associated costs

that might otherwise are not even identified. During these sessions, we were forced to raise the issues, make them explicit and write about them. He believes this practical component was very important, as it lead the group to go into deeper details on the changes to be made and its cost, along with the benefits expected from the project.

The third attendee to intervene was the Coordinator of the Non-Face-to-Face Channels Unit, from the Marketing Department. He stated that this methodology helps systematize all the work. According to him, the Benefits Dependency Network, that interrelates the objectives, with the business benefits and all the dependencies from IS/IT, the business changes that must be made, will help in the pre-project phase, by quantifying the business benefits, allowing also to perceive the impacts of the project on the different parts of the organizational structure. More than that, according to this attendee, it will help on the post-project phase. As the business benefits are perfectly quantified, and there is a stakeholder responsible for each of them, this responsible stakeholder knows he/she will be monitored and will be accountable for the realization of the business benefit. He referred that, in this financial organization, on the present time of cost restrictions there are currently some initiatives to better understand the costs and the benefits of each investment, in a more intently way than ever before, and he believes that this business benefits management methodology is particularly interesting, as it allows us to have a sort of a big picture of the project, crossing the changes that have to be made to the processes ant to the organization with the benefits that are expected to be attained from the investment. As to the ease of use of the Benefits Management methodology, he said, as it was his first contact with the methodology, he found it somewhat difficult, at the beginning, to differentiate between objectives and benefits, although admitting this to be perfectly normal in the first contact with any methodology. He believes in further contacts this would be clearer. About the benefits dependency network, this attendee referred that the most important thing about it is the result that remains for the next moment, after the project has been implemented, as it will allow us to create control milestones, to check the success of the project.

The attendee who was the second to intervene, again took the floor to state that the methodology, by encouraging people from different areas of the organization to get together to analyze the objectives, benefits and changes of the project, also permitted that different people looked into it and gave their opinions about it, and this is itself an added value from the methodology.

The last person to present her ideas on the methodology's utility and ease of use was the other member of the Business Cases Group, part of the Quality & Organizational Control Department. She began by stating her agreement with the other interventions and adding that she believes this methodology is useful and interesting, although, at the beginning, it is not very easy to understand the terminology. Once people get used to it, then it is useful as they can actually see the changes that have to be made within the organization to attain the objectives and reach the expected benefits of the investments.

6.3.2. Suggestions for improvement

The next point open to discussion was the eventual suggestions the attendees might have to improve the methodology. The researcher asked the attendees for their views on this subject. The first person to intervene was the manager from the Business Cases Group of the Quality & Organizational Control Department. According to her, one single case is not enough to have a strong opinion on the subject, as any idea related to anything that would not seem right for this project, could perhaps make more sense in other projects, so it would be unfair to criticize. She said they would need a larger project to form a clearer idea about possible improvements. The second element added to this by stating the fact that this work was mainly a pre-project analysis on the project, that probably will have to endure some changes once it starts. The researcher at this point reminded the attendees that the Benefits Management Methodology contemplates the reviews during the realization of the project, to check which benefits have been achieved and which changes have been undergone. These correspond to phases 4 and 5 of the Benefits Management process – respectively "Review and Evaluate Results" and "Establish Potential for Further Benefits". At this point everybody agreed that new follow-up meetings would be held later to undergo the above-mentioned phases of the methodology, to complete the cycle, as the attendees unanimously agreed it would be very important to complete the cycle.

6.3.3. The Agile Approach

About the Agile approach to information collection, by comparison with the traditional, more structured, waterfall-like process the researcher began by giving a brief overall explanation of the main differences and the advantages of one versus the other.

He reminded that, according to the proponents of the agile methods, a good plan is a plan that we know will change and we want it to change, as it means we have learned more about the project at hand (Cohn, 2005). The researcher explained that his idea was to use an agile approach to the Benefits Management process, instead of maintaining the previously defined, very strictly defined process. That process starts with the Objectives that derive from the business drivers, then defines the business benefits, then the business changes, enabling changes and IS/IT enablers, always following the process of identification and structuring the benefits, planning its realization, executing the plan, reviewing and evaluating and finally establishing the potential for further benefits. This process strictly defined and rigid process resembles the waterfall process that for a long time has been by software development professionals and has been frequently proven to be inefficient and to lack adherence to the real needs of the customers. As opposed to this method, the Agile methods implement the projects in a highly iterative manner, in small cycles – sprints or iterations – after which the customer is given the opportunity to look at what has been built and ask for changes he deems necessary. After explaining this to the audience, the researcher reminded them that this agile approach had been tried out in the case at study, by doing several cycles during which the elements of the Benefits Dependency Network were raised, discussed and registered into the software tool without regard to any specific order. The connections between the elements were also registered when they were raised, in whatever directions they appeared. The audience was then questioned whether they believed this approach was better or worse than a more traditional, structured one area at a time, process.

The first attendee to present his view on this subject was the Coordinator of the Non-Face-to-Face Channels Unit, from the Marketing Department. From his point of view, when using Agile Methodologies for the development of an IS/IT project, it makes a lot of sense to, when creating the requirements in user-stories, to simultaneously define the elements and create the Benefits Dependency Network. Although it was not possible to do this with the intervention under the present study, as the requirements were already created when the study was initiated, he believes it would have been very useful to create the Benefits Dependency Network at the same time. When someone says “I want this to be done that way”, then it is important to say why (with what objective), what will be the benefits of it, and also what changes, if any, have to be done to achieve those benefits. The Agile Methods, when describing the user-stories, focus on the “what”, i.e., on what

the software will have to do. This attendee believes it should be complemented with the "why", to help understand the reason for each development, which benefits is each development connected with, and also the "how", i.e., what are the changes that have to be implemented to achieve the benefits.

The next person to present her opinions on this sub-topic was the senior manager from the Business Cases Group, part of the Quality & Organizational Control Department. This participant was more preoccupied with the drivers of the investment and its objectives, and she believes these drivers and objectives must be clearly defined before starting to create the user-stories. According to her, the most important thing about an investment is to have very clearly, what the objectives are, and only then to worry about the benefits of that investment. She said that even if there are deviations on the attained benefits, what is more important is to focus on the objectives. To this remark, the third attendee – the Coordinator of the Non-Face-to-Face Channels Unit – said that he understood his colleague's remarks, because when the team is working on the Agile Methodology, writing the user-stories, it means the project has already been approved. He believes it is important to use the Benefits Management Methodology on a pre-project phase, when creating the business case for the investment.

This generated some discussions and, after that, everybody agreed on the following points, for projects that use some Agile methodology:

- The Benefits Management methodology is useful during the pre-project phase, to build the business case for the investment;
- It is useful to review and complete the whole Benefits Dependency Network during the definition of the requirements in user-stories;
- The Agile Methodologies state that after a maximum of 6 releases or three months (whichever is smaller) there should be a release, i.e., a version of the system that actually goes into production (Martin & Martin, 2006). At the end of each release cycle, there should be a review of the Benefits Dependency Network and all of its elements, and the state of the realization of all the changes and benefits should be reviewed. This is the perfect moment for looking at the work that has been done and the benefits that have been achieved or not achieved, i.e., to perform the two last steps of the Benefits Management process: Step

4 – Review & Evaluate Results and step 5 – Establish Potential for Further Benefits.

At this point, the senior member of the Quality & Organizational Control Department, working on the area of the Branch Network raised – second attendee – raised the issue of the difference between **Objective** and **Benefit** for an intervention, which is not always obvious. He said most of the times people are focused on the objectives, forgetting the importance of the Benefits, which are the ones that have measures associated with them and can be evaluated against those measures, to see at what degree they are being achieved.

6.3.4. BMS Software tool

The next point on the agenda to be discussed was the use of the BMS software tool to collect and manage the data about the elements of the Benefits Dependency Network. The researcher began by explaining that this Benefits Management methodology is not new, as it comes from the nineties – initially presented in 1996 by Ward et al (1996). Despite this, studies say that the actual usage of any formal method of Benefits Management has been in only about one third of the projects (Hallikainen et al., 2006; Lin & Pervan, 2003).

At a certain point, before this moment, one of the attendees had asked if there were in the market software tools to aid the use of the Benefits Management methodology. The researcher answered that, as far as he knew, there was not. The software tool implemented during this research project, being still am initial prototype, was itself a first attempt to implement the needed functionality to aid the management of the data for the Benefits Dependency Network. This software tool implements most of the needed functionality, although it is still a prototype, and lacks many improvements in what concerns to usability.

The researcher stated that, in the scope of this study, his argument was that one of the reasons for the low usage of any methodology for the management of business benefits in IS/IT implementations is the inexistence of a software tool that could help the process, namely managing the data, creating a assigning codes to the elements and defining the dependencies. He asked for comments on this argument.

The first attendee to express her opinion on this subject was the senior manager from the Business Cases Group, part of the Quality & Organizational Control Department. According to her, there is normally a tendency, in all areas, to consider the need of a software tool to run the business. She believes that most of the times things can be managed by using just plain paper or an Excel spreadsheet. The most important thing for her is to create the rules and to clearly define the concepts and then store the information either on paper or on spreadsheet files. Exploring this point a little more, we understood this attendee was really meant was that it was possible to create software tools using Microsoft Excel spreadsheets with templates and rules that solved most of the needs to use a methodology like the one being studied. This is, as the researcher pointed out, effectively an electronic tool, specifically tailored for the methodology being used, although not a programmed application.

The second intervenient on this subject, the Coordinator of the Non-Face-to-Face Channels Unit from the Marketing Department, took the floor to state that he understood the utility of using Excel as a basic tool to help using the Benefits Management methodology, although he also recognized the advantages of having a specially programmed software application for this. His arguments for this were the following: first of all, user-friendliness. He believes it would be much easier to implement this methodology with the help of the application, so it would increase the level of usage. If the application makes is user-friendly, it will make it easier to adopt the Benefits Management methodology, as the users would be guided to use it, for instances with examples. The second argument this attendee presented in favour of the usage of a software application was the possibility of accessing historic data. Once the methodology has been used for several projects, it would contain very rich data on past interventions, which would help to improve the accuracy of new predictions. If, adding to this, the application was in use in other organizations, it would even be possible to do benchmarks with other interventions. He stated that if the organization decides to adopt the Benefits Management methodology, they would need to adopt an application to aid them to use it.

The third attendee to intervene on this topic was the senior member of the Quality & Organizational Control Department, working on the area of the Branch Network. In his opinion, the most important thing about the eventual use of a software application is the patronization of the data. The fact that, during this case study work, a software tool was used, helped in standardizing the data gathered for each of the elements of the Benefits

Dependency Network. Without the necessary patronization, each person will create the data in his/her own way, without regard to the adoption of standards, and this will render data useless.

To conclude on this point, the researcher asked specifically whether the attendees believed the usage of any software application would potentiate the adoption of this Benefits Management methodology. The unanimous answer to this specific question was affirmative.

6.3.5. Visualization the elements and their dependencies

The next point open to the discussion was on the visual components of the Benefits Dependency Network. The researcher asked which of the possible visualizations – graphical network or reports – was more useful to understand the network. The unanimous answer to this point was that both visualizations were important, as they would complement each other. Thus, any software application to be used should show the results either as a graphical network or as reports.

6.3.6. Final comments and suggestions

Before ending this meeting, the researcher asked for any final comments and suggestions to improve either the Benefits Management methodology, the agile approach presented and partially followed for this case study or the software tool.

The coordinator of the Non-Face-to-Face Channels Unit, from the Marketing Department raised the idea of prioritization the elements of the network and their dependencies. According to him, elements like Objectives, or Benefits, mays have different levels of priority, as their impact on the organization might be different. At the same time, the enabling changes and business changes might have different levels of dependency to the achievement of the expected business benefits. Thus, the software tool should have the possibility to register different levels of importance for the elements of the network and the dependencies between elements, and provide some reports prioritized by those levels.

The senior member of the Quality & Organizational Control Department referred as a final comment that he thought the Benefits Management methodology was a very interesting and useful way to look at an investment in IS/IT, emphasizing the usefulness of assigning to each business benefit and to each business change or enabling change a responsible stakeholder. He believes assigning a responsible will help bring accountability, and this will help the projects.

The other member of the Business Cases Group, part of the Quality & Organizational Control Department ended this part of the meeting by stating her opinion that this methodology is very useful, as it helps the definition and follow-up of the project. She also found very important the possibility of having the stakeholders accountable for the achievement of the benefits or the realization of the changes.

7. DISCUSSION

This research was theoretically supported on the Design Science Research Methodology, as proposed by several authors (Dresch et al., 2015; Hevner & Chatterjee, 2010). This methodology includes in its process the definition and creation of the artifacts, their evaluation and the presentation and discussion of the result of the evaluation. Thus, this section presents the researcher's views on the research project and his beliefs about the contributions of the research to the subject of Benefits Management in interventions within organizations supported on the implementation of IS/IT enabling projects.

7.1. Relevance

The literature review on the implementation of IS/IT projects in organizations has shown that the level of success in most projects has still a large margin for improvement. Studies have shown over the years that the success rate of IS/IT projects has been consistently at about one third (Hastie & Wojewoda, 2015; Sauer et al., 1997; Serrador & Pinto, 2015; Standish Group, 2011; Vachon, 2016). This brings high context costs to the organizations, consuming resources that might otherwise be spent in other activities to faster the growth and make them more competitive in their operating markets. Most companies, even when increasing their spending in IS/IT, fail to see the corresponding increase in business profitability, thus not getting real business benefits from the money spent (Hesselmann et al., 2015; Tippins & Sohi, 2003).

Even when organizations report IS/IT projects as successful, most of the times they are only looking at success in terms of delivery time, money spent and the meeting of the specifications, and that can be delusionary, as a project can be unsuccessful although meeting those criteria (Caldeira & Ward, 2003; Farbey et al., 1999; Peppard et al., 2007; Serrano & Caldeira, 2002). There are indeed cases of projects that were complete failures in spite of having delivered in terms of duration, budget and quality, as the Motorola Iridium satellite project (Collyer et al., 2010; Serrador & Pinto, 2015).

Because of this, researchers and practitioners have been looking for and creating other ways to measure project success and increase it (DeLone & McLean, 1992; Irani & Love, 2002; Yates et al., 2009). One of these was the one chosen and adopted in the present research work, namely the Benefits Management process created in the University

of Cranfield and already adopted by several organizations (Peppard et al., 2007; Ward et al., 1996). This methodology has a very well-defined process that focus on the business benefits the organization expects to achieve with an intervention that is supported on IS/IT, and allows to make explicit all the changes the organization has to undergo to achieve those benefits, pointing out the fact that there are dependencies between the changes that have to be performed and the benefits that will arise. Previous appraising methods focus mainly on the technology and its implementation – cost, time, specifications – giving comparatively less importance to the changes the organization must undergo to achieve real business benefits from the use of new systems, technologies and processes.

Even though there are several good and proven methodologies to choose from to manage the benefits to organizations from the implementation of interventions supported by IT/IS, and the referred methodologies have been known for several years, there is little evidence that organizations around the world are actually resorting to any of those methodologies (Ashurst et al., 2008; Hesselmann et al., 2015; Lin & Pervan, 2003).

Resulting from these observations, it can be inferred that there is a lack of correspondence between the knowledge on the need of a methodology to manage the business benefits of interventions in organizations that are supported on IS/IT projects and the real application of those methodologies by practitioners. There is a gap between knowing how to do it and doing it, and this is what brings relevance to this research project, which aims to, by Design Science Research, build artefacts to help improve the use of Benefits Management methodologies and evaluate them.

7.2. Results

Given the low rates of usage of any Benefits Management methodology in organizations around the world, the argument presented in this research project was that the existence of two artefacts could help the implementation and effective use of the Cranfield Benefits Management methodology. The artefacts proposed are an agile approach to the operationalization of the methodology and a software application to act both as a usage guide and a tool to use during its application.

The reason for the argument in favour of the agile approach was the fact that the process for the Benefits Management is very rigid, resembling the waterfall process of the first software development methodologies. The software industry, after some years of ad-hoc development, when computer programming began to be more and more complex, devised a first methodology to introduce some discipline in the development process. This was the waterfall software development process which, resembling the industrial processes, defined very clearly the phases of a systems implementation project, its deliverables and responsibilities. Although this was a very important step in the evolution of the software development industry, bringing discipline, rules, documentation and accountability, it also brought a great deal of bureaucracy, overweight and additional costs to each project. When the business markets became more and more volatile, changing very frequent and at a very fast rate, the rigidity of the waterfall model became overwhelming to software development. This led to the Agile framework for software development and to the creation of several Software Development Agile methodologies. One of these methodologies and the most known and used around the world in the organization and managing of projects is Scrum.

The reason Scrum is being adopted by a large number of companies and teams is the fact that it is simultaneously light and disciplined, with very well-defined artefacts and ceremonies. In section 4.2, a proposal was presented for the new way to operationalize the Benefits Management methodology using some of the practices and ceremonies of the Scrum methodology, namely in the way to create the Benefits Dependency Network and in the reviews of these elements. This was one of the artefacts created in the scope of this research project, following the Design Science Research methodology.

The other artefact created was the software application. This application, although still in its working prototype phase, already implements all the main functionalities necessary to make it useful in a real case, including one that has proven very useful, which is the automatic assignment of codes to each of the elements of the network. The functionality is described in section 5.

To evaluate the two artefacts created – Agile approach and software tool – a Case Study was undertaken within a large bank, in a new project that was being prepared. During the referred case study, the software tool was used for registering all the elements

of the Benefits Dependency Network and the agile approach was used to the extent it was possible for the duration of the initial phase of the intervention under analysis – only the initial phase of the project, which was the building of the business case.

To enrich the evaluation of the methodology and the artefacts under analysis, a meeting was held, attended by the participants of the project under study, to obtain their opinions on several points about the Benefits Management methodology and the way it was operationalized with the use of the created artefacts. The meeting was recorded, with the permission of the participants and its content is described in section 6.3.

8. CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

This research project used the Design Science Research methodology to create and test artefacts with the objective of helping practitioners to increase the use of a specific model of Benefits Management methodology, namely the one created in the University of Cranfield. This methodology, although recognized by a large number of researchers, including the author of the present research, as an excellent and very useful methodology, has a surprisingly relatively low effective use rate.

The present research project was implemented with the ambitious goal of creating artefacts that could support the use of the Cranfield Benefits Management methodology, and eventually helping practitioners to increase its adoption. The artefacts created were a software tool to guide and support the utilization of the methodology and the agile approach to the process, following the principles and values of the Agile Development framework, as defined by the Agile Alliance.

The software tool created during this process, although still a working prototype, which needs to be improved in terms of graphical aspect, has already been tested in a real case study in a project on a large Portuguese bank. It is a fully functional application, with a good usability, lacking a better graphical design, especially in the generated reports. It also does not include the generation of the graphical Benefits Dependency Network. On the plus side, it has a very strong and coherent data model, which allows it to support all the elements of the network and their dependencies. With this data model, it will also be possible and easy to implement a functionality suggested by the practitioners, of having different levels of priority for the objectives and levels of dependency between the elements of the Benefits Dependency Network. The model is robust enough to support these changes without too much re-work.

As to the Agile approach to the process, described in section 4.2, it was not possible, due to the timing of the project and the case study within the bank, to test it to the whole extent. The intervention of the case study was still in the phase of creating the business case, and the Benefits Management methodology was successfully applied to that part of the intervention and it is planned to carry on for the rest of the project, with the participation of the author. The start date, on the other hand, is not yet defined, as the project has not been approved at the date of this document. For this reason, the Agile

approach was only partially tested and evaluated in the case study, namely the definition of the elements of the network.

Considering how the case study was conducted and the feed-back registered from the participants from the bank, it can be concluded that the artefacts brought a significant contribution to make the use of the Benefits Management methodology easier to adopt and use. The participants in the review meeting, ended up unanimously agreeing on the utility of the Benefits Management methodology, used as it was and supported by the software tool. They requested that the methodology's use be continued with subsequent follow-up meetings to verify whether the proposed benefits were being attained, and those meetings were agreed upon. There were some useful suggestions to new functionality to be included in the software application and also to the Benefits Dependency Network, which will be considered in the future work on this research, namely the implementation of prioritization and different levels in the dependencies and contributions to the objectives. Thus, we believe this work constitutes a valid contribution to the academia and to the industry, with a potential for further investigation and development that might enrich the use of the Benefits Management methodology in interventions highly supported in the implementation of IS/IT.

The future steps in this research are the already agreed follow-up of the next phases of the case study intervention, until the achievement of the expected business benefits, using the Agile approach to the implementation of the methodology with time-boxed meetings performed along with the sprint review meetings, as the development will follow the Agile Scrum methodology. This will allow the evaluation and eventual refinement of the Agile Approach to the Benefits Management methodology.

Another line of action for the future research is the software tool. In this point, what needs to be done is the migration of the application to a multi-user environment, with a centralized shared database instead of a local database, the refinement of the graphical appearance, mainly on the reports generated by the application and the implementation of a functionality for the generation of the graphic containing the Benefits Dependency Network. As a lower priority, it can be created within the application the functionality for levels of dependency and prioritization of business objectives, although, being as it is a relatively simple addition to the model, it can be done simultaneously with the previous developments.

In summary, we can conclude by stating our believe that this research is relevant, as it might help practitioners adopt the Benefits Management methodology created in the University of Cranfield. The adoption and use of the Cranfield Benefits Management methodology, we strongly believe, will help organizations better understand and choose their investments.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211.

Ambler, S. W. (2004). *The object primer: Agile model-driven development with UML 2.0*. Cambridge University Press.

Ashurst, C., Doherty, N. F., & Peppard, J. (2008). Improving the impact of IT development projects: the benefits realization capability model. *European Journal of Information Systems*, *17*(4), 352–370.

Augustine, S., Payne, B., Sencindiver, F., & Woodcock, S. (2005). Agile project management: steering from the edges. *Communications of the ACM*, *48*(12), 85–89.

Bader, G. E., & Rossi, C. A. (1998). *Focus groups: A step-by-step guide*. Bader Group.

Balaji, S., & Murugaiyan, M. S. (2012). Waterfall vs. V-Model vs. Agile: A comparative study on SDLC. *International Journal of Information Technology and Business Management*, *2*(1), 26–30.

Bloor, M., Frankland, J., Thomas, M., & Robson, K. (2001). *Focus groups in social research*. London: Sage.

Boehm, B. (1976). *Software Engineering*. (R. W. Selby, Ed.). New Jersey: John Wiley & Sons.

Boehm, B. (1996). Anchoring the software process. *IEEE Software*, *13*(4), 73–82.

Boehm, B. (2002). Get ready for agile methods, with care. *Computer*, *35*(1), 64–69.

Breese, R. (2012). Benefits realisation management: Panacea or false dawn? *International Journal of Project Management*, *30*(3), 341–351.

Caldeira, M. (2000). Critical Realism: A philosophical perspective for case study research in social sciences. *Episteme*, *2*(5–6), 73–88.

Caldeira, M., Serrano, A., Quaresma, R., Pedron, C., & Romão, M. (2012). Information and communication technology adoption for business benefits: A case analysis of an integrated paperless system. *International Journal of Information Management*, *32*(2), 196–202.

Caldeira, M., & Ward, J. (2003). Using resource-based theory to interpret the successful adoption and use of information systems and technology in manufacturing small

and medium-sized enterprises. *European Journal of Information Systems*, *12*(2), 127–141.

Codd, E. F. (1970). A Relational Model of Data for Large Shared Data Banks. *Commun. ACM*, *13*(6), 377–387.

Cohn, M. (2004). *User stories applied: For agile software development*. Addison-Wesley Professional.

Cohn, M. (2005). *Agile estimating and planning*. Pearson Education.

Collyer, S., Warren, C., Hemsley, B., & Stevens, C. (2010). Aim, fire, aim - Project planning styles in dynamic environments. *Project Management Journal*, *41*(4), 108–121.

Conforto, E. C., Amaral, D. C., da Silva, S. L., Di Felippo, A., & Kamikawachi, D. S. L. (2016). The agility construct on project management theory. *International Journal of Project Management*, *34*(4), 660–674.

Cooper, R. G. (2016). Agile-Stage-Gate Hybrids. *Research Technology Management*, *59*(1), 21–29.

DeLone, W. H., & McLean, E. R. (1992). Information Systems Success: The Quest for the Dependent Variable. *Information Systems Research*, *3*(1), 60–95.

Dennis, A., Wixom, B. H., & Tegarden, D. (2009). *Systems analysis and design: An object-oriented approach with UML* (3rd ed.). John Wiley & Sons.

Dobson, P. J. (2001). The Philosophy of Critical Realism - An Opportunity for Information Systems Research. *Information Systems Frontiers*, *3*(2), 199–210.

Dresch, A., Lacerda, D. P., & Júnior, J. A. V. A. (2015). *Design Science Research: Método de Pesquisa para Avanço da Ciência e Tecnologia*. São Paulo: Bookman Editora.

Farbey, B., Land, F., & Targett, D. (1999). Moving IS evaluation forward: learning themes and research issues. *The Journal of Strategic Information Systems*, *8*(2), 189–207.

Fischer, G., & Schneider, M. (1984). Knowledge-based communication processes in software engineering. In *Proceedings of the 7th international conference on Software engineering* (pp. 358–368). IEEE Press.

Gregg, D. G., Kulkarni, U. R., & Vinzé, A. S. (2001). Understanding the Philosophical Underpinnings of Software Engineering Research in Information Systems. *Information Systems Frontiers*, *3*(2), 169–183.

Gregor, S. (2006). The nature of theory in information systems. *Management Information Systems Quarterly*, *30*(3), 611.

Hallikainen, P., Hu, Q., Frisk, E., Päivärinta, T., Eikebrokk, T. R., & Nurmi, A. (2006). The use of formal IT investment evaluation methods in organizations: A survey of european countries. In *Proceedings of the Twelfth America Conference on Information Systems* (pp. 528–535). Citeseer.

Han, W.-M., & Huang, S.-J. (2007). An empirical analysis of risk components and performance on software projects. *Journal of Systems and Software*, *80*(1), 42–50.

Harvie, D. P., & Agah, A. (2016). Targeted scrum: Applying mission command to agile software development. *IEEE Transactions on Software Engineering*, *42*(5), 476–489.

Hastie, S., & Wojewoda, S. (2015). Standish Group 2015 Chaos Report - Q&A with Jennifer Lynch. Retrieved September 12, 2017, from https://www.infoq.com/articles/standish-chaos-2015

Hesselmann, F., Ahlemann, F., & Böhl, D. (2015). Not Everybody's Darling-Investigating the Acceptance of Benefits Management and Moderating Organizational Characteristics. In *Wirtschaftsinformatik* (pp. 585–599). Osnabrück.

Hevner, A., & Chatterjee, S. (2010). *Design Research in Information Systems*. *wwwisworldorg* (Vol. 22). Boston, MA: Springer US.

Hevner, A., March, S., Park, J., & Ram, S. (2004). Design Science in Information Systems Research. *MIS Quarterly*, *28*(1), 75–105. https://doi.org/10.2307/25148869

Hirschheim, R. A. (1985). Information Systems Epistemology: An Historical Perspective. *Research Methods in Information Systems*, 9–32.

Hodgkinson, G. P., Herriot, P., & Anderson, N. (2001). Re-aligning the Stakeholders in Management Research: Lessons from Industrial, Work and Organizational Psychology. *British Journal of Management*, *12*, S41.

Holmström, J., Ketokivi, M., & Hameri, A.-P. (2009). Bridging practice and theory: a design science approach. *Decision Sciences*, *40*(1), 65–87.

IMF. (2016). *Global Financial Stability Report*. Washington, DC.

Irani, Z., & Love, P. E. D. (2002). Developing a frame of reference for ex-ante IT/IS investment evaluation. *European Journal of Information Systems*, *11*(1), 74–82.

Ives, B., Olson, M. H., & Baroudi, J. J. (1983). The measurement of user information satisfaction. *Communications of the ACM*, *26*(10), 785–793.

Laudon, K., & Laudon, J. (2015). *Managing Information Systems: Managing the Digital Firm* (14th ed.). England: Pearson.

Lee, J., Pries-Heje, J., & Baskerville, R. (2011). Theorizing in design science research. *DESRIST*, 1–16.

Lin, C., & Pervan, G. (2003). The practice of IS/IT benefits management in large Australian organizations. *Information & Management*, *41*(1), 13–24.

March, S. T., & Smith, G. F. (1995). Design and natural science research on information technology. *Decision Support Systems*, *15*(4), 251–266.

Martin, R. C., & Martin, M. (2006). *Agile principles, patterns, and practices in C*. New Jersey: Pearson Education.

McCracken, D. D., & Jackson, M. A. (1982). Life cycle concept considered harmful. *ACM SIGSOFT Software Engineering Notes*, *7*(2), 29–32.

Mingers, J. (2004). Real-izing information systems: critical realism as an underpinning philosophy for information systems. *Information and Organization*, *14*(2), 87–103.

Nelson, R. R. (2007). IT Project Management: Infamous Failures, Classic Mistakes, and Best Practices. *MIS Quarterly Executive*, *6*(2), 67–78.

Nerur, S., Mahapatra, R., & Mangalaraj, G. (2005). Challenges of migrating to agile methodologies. *Communications of the ACM*, *48*(5), 72–78.

Peppard, J., & Ward, J. (2005). Unlocking sustained business value from IT investments. *California Management Review*, *48*(I), 52–71.

Peppard, J., Ward, J., & Daniel, E. (2007). Managing the realization of business benefits from IT investments. *MIS Quarterly Executive*, *6*(1).

Pfeffer, J., & Sutton, R. I. (1999). Knowing "What" to Do Is Not Enough: Turning Knowledge into Action. *California Management Review*, *42*(1), 83–108.

Poppendieck, M., & Poppendieck, T. (2003). *Lean Software Development: An Agile Toolkit: An Agile Toolkit*. Addison-Wesley.

Rubin, K. S. (2012). *Essential Scrum: A practical guide to the most popular Agile process*. Addison-Wesley.

Sauer, C., Southon, G., & Dampney, C. n g. (1997). Fit, failure, and the house of

horrors: toward a configurational theory of IS project failure. In *Proceedings of the eighteenth international conference on Information systems* (pp. 349–366).

Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research Methods for Business Students*. *Business* (6th ed., Vol. 5th). London: Pearson Education UK.

Sayer, R. (1992). *Method in social science: A realist approach*. London: Routledge.

Schwaber, K. (1997). Scrum development process. In *Business Object Design and Implementation* (pp. 117–134). Springer.

Schwaber, K. (2004). *Agile project management with Scrum*. Microsoft press.

Serrador, P., & Pinto, J. K. (2015). Does Agile work? - A quantitative analysis of agile project success. *International Journal of Project Management*, *33*(5), 1040–1051.

Serrano, A., & Caldeira, M. (2002). Um modelo de gestão de investimentos em sistemas e tecnologias de informaçao. *Revista Portuguesa de Gestão*, 14–23.

Simon, H. A. (1996). *The sciences of the artificial*. MIT press.

Somekh, B., & Lewin, C. (2005). *Research methods in the social sciences*. Sage.

Standish Group. (2011). The Crisis in Software: The Wrong Process Produces the Wrong Results. Retrieved May 1, 2015, from www.controlchaos.com/storage/S3D First Chapter.pdf

Stark, S., & Torrence, H. (2005). Case Study. In B. Somekh & C. Lewin (Eds.), *Research methods in the social sciences* (pp. 33–40). London: SAGE Publications Limited.

Stettina, C. J., & Hörz, J. (2015). Agile portfolio management: An empirical perspective on the practice in use. *International Journal of Project Management*, *33*(1), 140–152.

Stewart, D. W., & Shamdasani, P. N. (1990). *Focus Groups: Theory and Practice* (Vol. 20). SAGE Publications, Incorporated.

Strassmann, P. A. (1997). *The Squandered Computer*. Connecticut: The Information Economics Press.

Suddaby, R. (2006). From The Editors: What Grounded Theory Is Not. *Academy of Management Journal*, *49*(4), 633–642.

Takeuchi, H., & Nonaka, I. (1986). The New Product Development Game. *Harvard Business Review*, *64*(1), 137–146.

Tippins, M. J., & Sohi, R. S. (2003). IT competency and firm performance : is organizational learning a missing link? *Strategic Management JournalManagement*, *24*(8), 745–761.

Vachon, J.-S. (2016). *Why Projects Fail*. Gatineau.

Vaishnavi, V., & Kuechler Jr., W. (2007). *Design science research methods and patterns: innovating information and communication technology*. New York: Auerbach Publications.

Venable, J. (2006). The role of theory and theorising in design science research. In *Proceedings of the 1st International Conference on Design Science in Information Systems and Technology (DESRIST 2006)* (pp. 1–18).

Walls, J. G., Widmeyer, G. R., El Sawy, O. A., & Sawy, O. A. E. (1992). Building an information system design theory for vigilant EIS. *Information Systems Research*, *3*, 36–59.

Walsham, G. (2006). Doing interpretive research. *European Journal of Information Systems*, *15*(3), 320–330.

Ward, J., & Daniel, E. (2005). *Benefits Management: Delivering Value from IS and IT Investments* (1st ed.). Londres: John Wiley & Sons.

Ward, J., & Daniel, E. (2012). *Benefits Management: How to Increase the Business Value of Your IT Projects*. Wiley.

Ward, J., & Peppard, J. (2002). *Strategic Planning for Information Systems*. John Wiley & Sons.

Ward, J., Taylor, P., & Bond, P. (1996). Evaluation and realisation of IS/IT benefits: an empirical study of current practice. *European Journal of Information Systems*, *4*, 214–225.

Winter, R. (2008). Design science research in Europe. *European Journal of Information Systems*, *17*(5), 470–475.

Yates, K., Sapountzis, S., Lou, E., & Kagioglou, M. (2009). BeReal: tools and methods for implementing benefits realisation and management. In *5th Nordic Conference on Construction Economics and Organisation* (pp. 223–232). Reykjavík.

Yin, R. K. (2009). *Case study research: Design and methods* (4th Ed.). Thousand Oaks: Sage publications.

APPENDIX A: RELATIONAL MODEL FOR SW TOOL

For the development of the software tool, the following relational schema was created from the UML Class Diagram of page 66:

Relational Schema

Intervention (idIntervention, intCode, intName, intDescription, intBeginDate, intEndDate)

ITenabler (idItEnabler, iteCode, iteTitle, iteDescription, iteIsCompleted, *idIntervention*)

EnablingChange(idEnablingChange, ecCode, ecTitle, ecDescription, ecIsCompleted, *idStakeHolder*, *idIntervention*)

BusinesChange(idBusinesChange, bcCode, bcTitle, bcDescription, bcIsCompleted, *idStakeHolder*, *idIntervention*)

StakeHolder(idStakeHolder, shCode, shName, shDescription, *idIntervention*)

BusinesBenefit(idBusinesBenefit, bbCode, bbName, bbDescription, bbCurrentValue, bbExpectedValue, bbExpectedDate, *idBenefitMeasure*, *idBenefitType*, *idStakeHolder*, *idIntervention*)

BenefitMeasure(idBenefitMeasure, bmCode, bmName, bmDescription, bmUnitOfMeasure, bmCanBeSummed, *idIntervention*)

InvestmentObjective(idInvestmentObjective, ioCode, ioName, ioDescription, *idIntervention*)

BenefitType(idBenefitType, btCode, btName, btDescription, btIsMeasurable)

ItEnablerAllowsEnablingChange(*idItEnabler*, *idEnablingChange*)

ItEnablerAllowsItEnabler(*idItEnablerFrom, idItEnablerTo*)

EnablingChangeAllowsEnablingChange(*idEnablingChangeFrom, idEnablingChangeTo*)

EnablingChangeAllowsBusinessChange(*idEnablingChange, idBusinesChange*)

BusinesChangeAllowsBusinesChange(*idBusinesChangeFrom, idBusinesChangeTo*)

StakeholderIsResponsibleForEnablingChange(*idStakeHolder, idEnablingChange*)

StakeholderIsResponsibleForBusinessChange(*idStakeHolder, idBusinesChange*)

StakeholderIsResponsibleForBusinessBenefit(*idStakeHolder, idBusinesBenefit*)

EnablingChangeLeadsToBusinessBenefit(*idEnablingChange, idBusinesBenefit*)

ItEnablerAllowsBusinessChange(*idItEnabler, idBusinesChange*)

BusinesChangeLeadsToBusinessBenefit(*idBusinesChange, idBusinesBenefit*)

BusinesBenefitRelatesToInvestmentObjective(*idBusinesBenefit, idInvestmentObjective*)

APPENDIX B: SOURCE CODE SAMPLES

```
Public Function GetMyNextCode(V_Tname As String, V_Prefix As String, V_Code As String) As String

    Dim V_ResultSet As Recordset, V_SQL As String, V_NextCode As String

    Dim V_Pref_Len As Long

    V_Pref_Len = Len(V_Prefix)

    V_SQL = "SELECT """ & V_Prefix & """" & "&format(max(right(" & V_Code & ",2))+1,""0#"") AS NextCode
               From " & V_Tname & " Where idIntervention = " & TempVars![V_idIntervention]

    Set V_Result = CurrentDb.OpenRecordset(V_SQL)

    V_NextCode = V_Result!NextCode

    If Len(V_NextCode) <= V_Pref_Len Then

        V_NextCode = V_NextCode & "01"

    End If

    V_Result.Close

    Set V_Result = Nothing

    GetMyNextCode = V_NextCode

End Function
```

APPENDIX C: CASE STUDY OBJECTIVES

List of Investment Objectives

O01	Aumentar volume de vendas
Ao criar mais um canal de vendas, poderemos aumentar o volume de vendas	
O02	Manter ou aumentar a proximidade com o cliente
Fazer face à redução do número de agências, mantendo ou mesmo aumentando a proximidade e envolvimento com o cliente.	
O03	Melhorar a experiência do cliente
Reduzir a complexidade processual e burocrática na relação com os nossos clientes	
O04	Reduzir custos
Neste estado da economia, todas as instituições financeiras têm como objetivo reduzir os custos operacionais. Este objetivo de redução de custos está presente em todas as intervenções.	

APPENDIX D: CASE STUDY BUSINESS BENEFITS

List of Busines Benefits

B01	Aumento do valor de Produto Bancário em Crédito Pessoal	Financial

Responsible: Responsável Unidade Banca Direta

Aumento do valor cobrado em comissões de produtos de crédito pessoal e aumento da respetiva margem financeira.

Racional de cálculo do benefício:
Baixa quota de mercado de 8,8% e que não corresponde à posição da CGD no mercado ;
Para um objetivo de aumento de 10% no volume de contratação (cerca de 20 milhões), prevê-se obter no final do primeiro ano cerca de 525.000 € em produto bancário;
Como referência deve ser considerada a performance de colocação de cartões nos canais, que atualmente contribuem com 20 a 25% da produção total de cartões de crédito

Current Value: 477000 Expected Value: 525000 Expected Date: 31/12/2018

Measured In: Valor Total de Produto Bancário Units of Measure: €

B02	Aumento da margem financeira para produtos de LDN	Financial

Responsible: Responsável Unidade Banca Direta

Aumento da margem para produtos de Limite de Descoberto Negociado (Descoberto em contas-ordenado)
Racional de Cálculo do Benefício:
50% dos clientes Caixa têm o ordenado domiciliado, no entanto, apenas 20% têm o limite descoberto associado;
Para um cenário (conservador) de aumento de 10% no volume de contratação (cerca 5.000 novas operações), prevê-se obter no final do primeiro ano cerca de 72.000 € em produto bancário;
Como referência deve ser considerada a performance de colocação de cartões nos canais, que atualmente contribuem com 20 a 25% da produção total de cartões de crédito.

Current Value: 65500 Expected Value: 72000 Expected Date: 31/12/2018

Measured In: Valor Total de Produto Bancário Units of Measure: €

B03	Aumento das comissões em Seguros não financeiros	Financial

Responsible: Responsável Unidade Banca Direta

Aumentar as comissões cobradas na venda de seguros Não Financeiros.

Racional de Cálculo do Benefício:
Baixa quota de mercado de 13% e que não corresponde à posição da CGD no mercado ;
Para um objetivo de aumento de cerca de 10% no volume de contratação (cerca de 1,6 Milhões), prevê-se obter no final do primeiro ano cerca de 130.000 € em produto bancário;
Como referência deve ser considerada a performance de colocação de cartões nos canais, que atualmente contribuem com 20 a 25% da produção total de cartões de crédito

Current Value: 118000 Expected Value: 130000 Expected Date: 31/12/2018

Measured In: Valor Total de Produto Bancário Units of Measure: €

B04	Aumento das comissões em Novas de contas Guarda-título	Financial

Responsible: Responsável Unidade Banca Direta

Por via de uma maior contratação de contas de ativos financeiros, teremos um aumento das comissões.

Racional de Cálculo do Benefício:
A proporção de Clientes ativos (particulares) que detêm uma Conta de Investimentos ativa é de 7%, enquanto que a média bancária nacional situa-se nos 18%;
A penetração digital da Caixa ao nível das Contas de Investimento (Clientes de Investimento digitais/Total de Clientes de Investimento) é de 44%, ao passo que a média nacional situa-se nos 70%;
Como referência deve ser considerada a performance da CGD (gestão de 18.000 clientes) na OTRV de 2016 foram colocados 610.000€. Para um cenário de alargamento para mais 150.000 (altamente conservador) e apenas considerando emissões bianuais de OTRV, prevê-se obter cerca de 77.000 € de comissões no final do primeiro ano.
Para efeitos de beneficio não foram contabilizados comissões de guarda de títulos. No caso da subida de 1% (de 7 para 8%), o acréscimo de comissões de guarda de títulos no final do primeiro ano, seria de 560.000€ e considerando que apenas 30% das novas contas teriam títulos em carteira.

Current Value: 61800 Expected Value: 77000 Expected Date: 31/12/2018

Measured In: Valor Total de Produto Bancário Units of Measure: €

B05	Redução de custos de arquivos físicos em papel	Measurable

Responsible: Departamento de Organização e Qualidade

Os documentos físicos em papel que são atualmete recolhidos nos balcões deixarão de existir com os novos processos feitos online, assim reduzindo os custos de armazenamento.

Current Value: 0 Expected Value: 0 Expected Date: TBD

Measured In: Custo total de armazenamento de processos Units of Measure: €

B06	Redução de recursos associados ao processo de negócio	Measurable

Responsible: Responsável Unidade Banca Direta

Ao alocar menos recursos humanos e/ou materiais aos processos de contratação dos produtos abrangidos (custos fixos de contacto direto com os clientes), esses recursos poderão ser reutilizados em outros processos.
O valor utilizado é o de "Cost-to-Serve"

Current Value: 0 Expected Value: 0 Expected Date: TBD

Measured In: Cost to Serve Units of Measure: € por Processo

B07	Redução da taxa de abandono de clientes por fecho de agências	Measurable

Responsible: Responsável Unidade Banca Direta

A tendência atual de fecho de agências bancárias terá provavelmente um efeito de aumento da taxa de churn. Este projeto deverá ajudar a reduzir este efeito, mantendo a proximidade digital com os clientes.
Esta contribuição só poderá ser medida através de um questionário ao fim de um ano de utilização do projeto, onde se poderá questionar clientes que adquiriram produtos através deste novo canal para averiguar se o canal teve alguma influência na sua decisão de não abandono.

Current Value: 0 Expected Value: 0 Expected Date: TBD

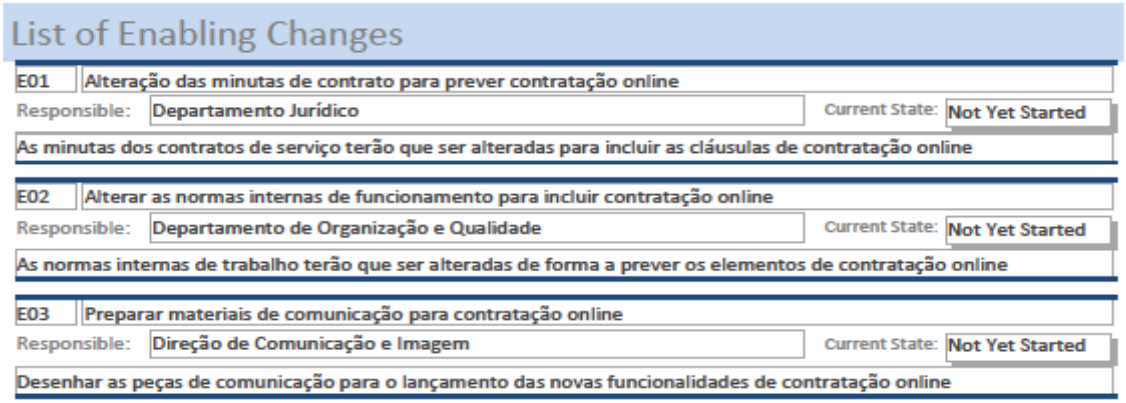
Measured In: Taxa de abandono de clientes (taxa de churn) Units of Measure: %

APPENDIX E: CASE STUDY BUSINESS CHANGES

List of Busines Changes

C01	Parte da Contratação de crédito pessoal será feita online		
Responsible:	Responsável Unidade Banca Direta	Current State:	Not Yet Started
O cliente poderá fazer a contratação de um crédito pessoal apenas acedendo ao canal digital quer em webapp, quer em mobile app			
C02	Parte da Contratação de seguros não financeiros será feita online		
Responsible:	Responsável Unidade Banca Direta	Current State:	Not Yet Started
O cliente poderá fazer a contratação de um seguro não financeiro apenas acedendo ao canal digital quer em webapp, quer em mobile app			
C03	Parte da Contratação de LDN será feita online		
Responsible:	Responsável Unidade Banca Direta	Current State:	Not Yet Started
O cliente poderá fazer a contratação Limite Descoberto Negociado apenas acedendo ao canal digital quer em webapp, quer em mobile app			
C04	A abertura de contas de Ativos Financeiros poderá ser feita online		
Responsible:	Responsável Unidade Banca Direta	Current State:	Not Yet Started
O cliente poderá abrir uma conta de ativos financeiros acedendo apenas à aplicação web ou móvel			
C05	Deixar de recolher cópias físicas de documentação processual		
Responsible:	Departamento de Organização e Qualidade	Current State:	Not Yet Started
Atualmente, em cada processo de crédito, são recolhidos documentos em papel, que são enviados para os arquivos físicos do processo de cliente e posteriormente enviados para arquivo central, o que representa um custo significativo. Com a contratação online deixam de ser recolhidos documentos físicos, com a simplificação e poupança inerentes.			

APPENDIX F: CASE STUDY ENABLING CHANGES



List of Enabling Changes

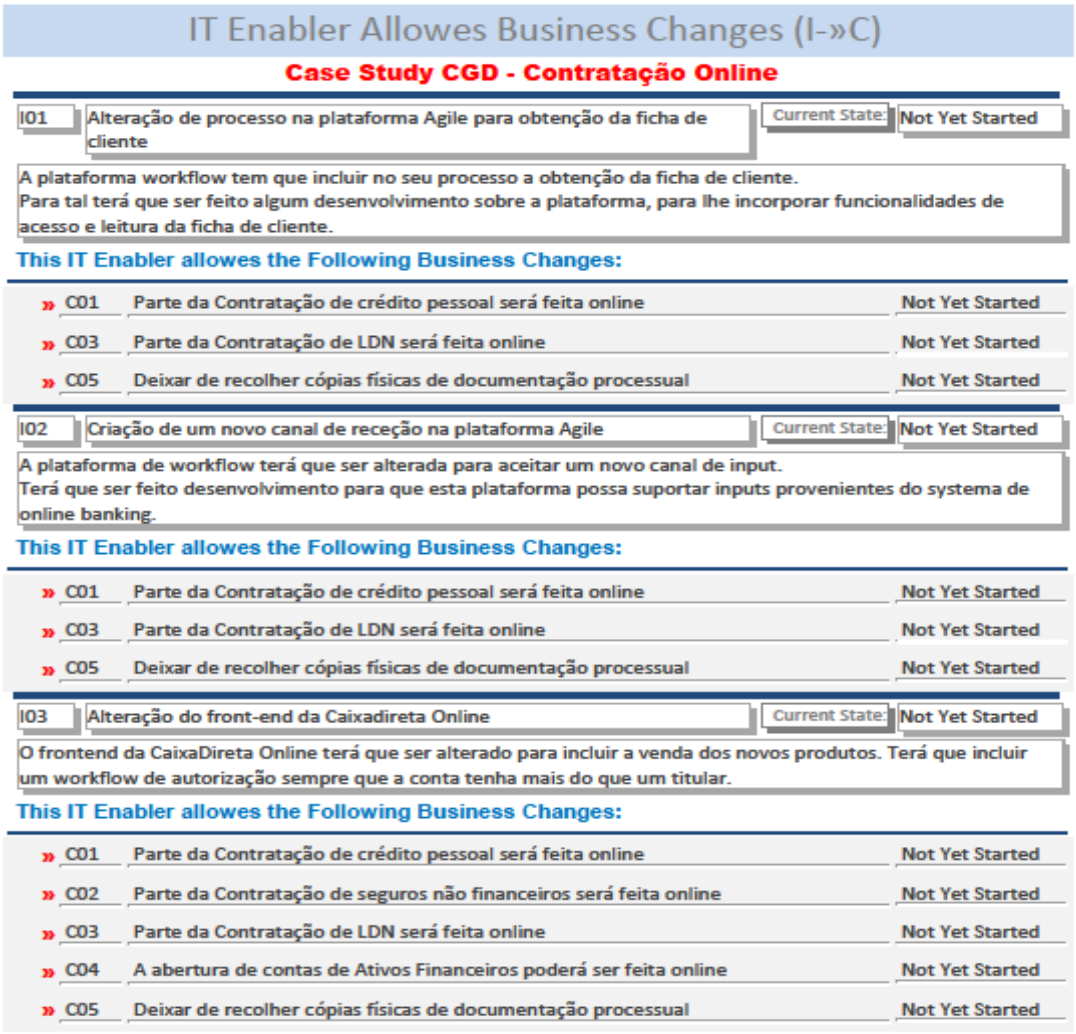
E01	Alteração das minutas de contrato para prever contratação online		
Responsible:	Departamento Jurídico	Current State:	Not Yet Started
As minutas dos contratos de serviço terão que ser alteradas para incluir as cláusulas de contratação online			
E02	Alterar as normas internas de funcionamento para incluir contratação online		
Responsible:	Departamento de Organização e Qualidade	Current State:	Not Yet Started
As normas internas de trabalho terão que ser alteradas de forma a prever os elementos de contratação online			
E03	Preparar materiais de comunicação para contratação online		
Responsible:	Direção de Comunicação e Imagem	Current State:	Not Yet Started
Desenhar as peças de comunicação para o lançamento das novas funcionalidades de contratação online			

APPENDIX G: CASE STUDY IS/IT ENABLERS

List of IS/IT Enablers

I01	Alteração de processo na plataforma Agile para obtenção da ficha de cliente	Current State:	Not Yet Started
A plataforma workflow tem que incluir no seu processo a obtenção da ficha de cliente. Para tal terá que ser feito algum desenvolvimento sobre a plataforma, para lhe incorporar funcionalidades de acesso e leitura da ficha de cliente.			
I02	Criação de um novo canal de receção na plataforma Agile	Current State:	Not Yet Started
A plataforma de workflow terá que ser alterada para aceitar um novo canal de input. Terá que ser feito desenvolvimento para que esta plataforma possa suportar inputs provenientes do systema de online banking.			
I03	Alteração do front-end da Caixadireta Online	Current State:	Not Yet Started
O frontend da CaixaDireta Online terá que ser alterado para incluir a venda dos novos produtos. Terá que incluir um workflow de autorização sempre que a conta tenha mais do que um titular.			

APPENDIX H1: BUSINESS CHANGES THAT DEPNEND ON EACH IS/IT ENABLER (I-»C)



IT Enabler Allowes Business Changes (I-»C)

Case Study CGD - Contratação Online

I01	Alteração de processo na plataforma Agile para obtenção da ficha de cliente	Current State:	Not Yet Started

A plataforma workflow tem que incluir no seu processo a obtenção da ficha de cliente.
Para tal terá que ser feito algum desenvolvimento sobre a plataforma, para lhe incorporar funcionalidades de acesso e leitura da ficha de cliente.

This IT Enabler allowes the Following Business Changes:

» C01	Parte da Contratação de crédito pessoal será feita online	Not Yet Started
» C03	Parte da Contratação de LDN será feita online	Not Yet Started
» C05	Deixar de recolher cópias físicas de documentação processual	Not Yet Started

I02	Criação de um novo canal de receção na plataforma Agile	Current State:	Not Yet Started

A plataforma de workflow terá que ser alterada para aceitar um novo canal de input.
Terá que ser feito desenvolvimento para que esta plataforma possa suportar inputs provenientes do systema de online banking.

This IT Enabler allowes the Following Business Changes:

» C01	Parte da Contratação de crédito pessoal será feita online	Not Yet Started
» C03	Parte da Contratação de LDN será feita online	Not Yet Started
» C05	Deixar de recolher cópias físicas de documentação processual	Not Yet Started

I03	Alteração do front-end da Caixadireta Online	Current State:	Not Yet Started

O frontend da CaixaDireta Online terá que ser alterado para incluir a venda dos novos produtos. Terá que incluir um workflow de autorização sempre que a conta tenha mais do que um titular.

This IT Enabler allowes the Following Business Changes:

» C01	Parte da Contratação de crédito pessoal será feita online	Not Yet Started
» C02	Parte da Contratação de seguros não financeiros será feita online	Not Yet Started
» C03	Parte da Contratação de LDN será feita online	Not Yet Started
» C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Not Yet Started
» C05	Deixar de recolher cópias físicas de documentação processual	Not Yet Started

APPENDIX H2: IS/IT ENABLERS THAT ALLOW EACH BUSINESS CHANGE (C-»I)

Busines Change Allowed By IT Enablers (C-»I)

Case Study CGD - Contratação Online

C01	Parte da Contratação de crédito pessoal será feita online	Current State:	Not Yet Started

O cliente poderá fazer a contratação de um crédito pessoal apenas acedendo ao canal digital quer em webapp, quer em mobile app

Responsible: Responsável Unidade Banca Direta

This Business Change was allowed by the Following IT Enablers:

»	I01	Alteração de processo na plataforma Agile para obtenção da ficha de cliente	Not Yet Started
»	I02	Criação de um novo canal de receção na plataforma Agile	Not Yet Started
»	I03	Alteração do front-end da Caixadireta Online	Not Yet Started

C02	Parte da Contratação de seguros não financeiros será feita online	Current State:	Not Yet Started

O cliente poderá fazer a contratação de um seguro não financeiro apenas acedendo ao canal digital quer em webapp, quer em mobile app

Responsible: Responsável Unidade Banca Direta

This Business Change was allowed by the Following IT Enablers:

»	I03	Alteração do front-end da Caixadireta Online	Not Yet Started

C03	Parte da Contratação de LDN será feita online	Current State:	Not Yet Started

O cliente poderá fazer a contratação Limite Descoberto Negociado apenas acedendo ao canal digital quer em webapp, quer em mobile app

Responsible: Responsável Unidade Banca Direta

This Business Change was allowed by the Following IT Enablers:

»	I01	Alteração de processo na plataforma Agile para obtenção da ficha de cliente	Not Yet Started
»	I02	Criação de um novo canal de receção na plataforma Agile	Not Yet Started
»	I03	Alteração do front-end da Caixadireta Online	Not Yet Started

C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Current State:	Not Yet Started

O cliente poderá abrir uma conta de ativos financeiros acedendo apenas à aplicação web ou móvel

Responsible: Responsável Unidade Banca Direta

This Business Change was allowed by the Following IT Enablers:

»	I03	Alteração do front-end da Caixadireta Online	Not Yet Started

C05	Deixar de recolher cópias físicas de documentação processual	Current State:	Not Yet Started

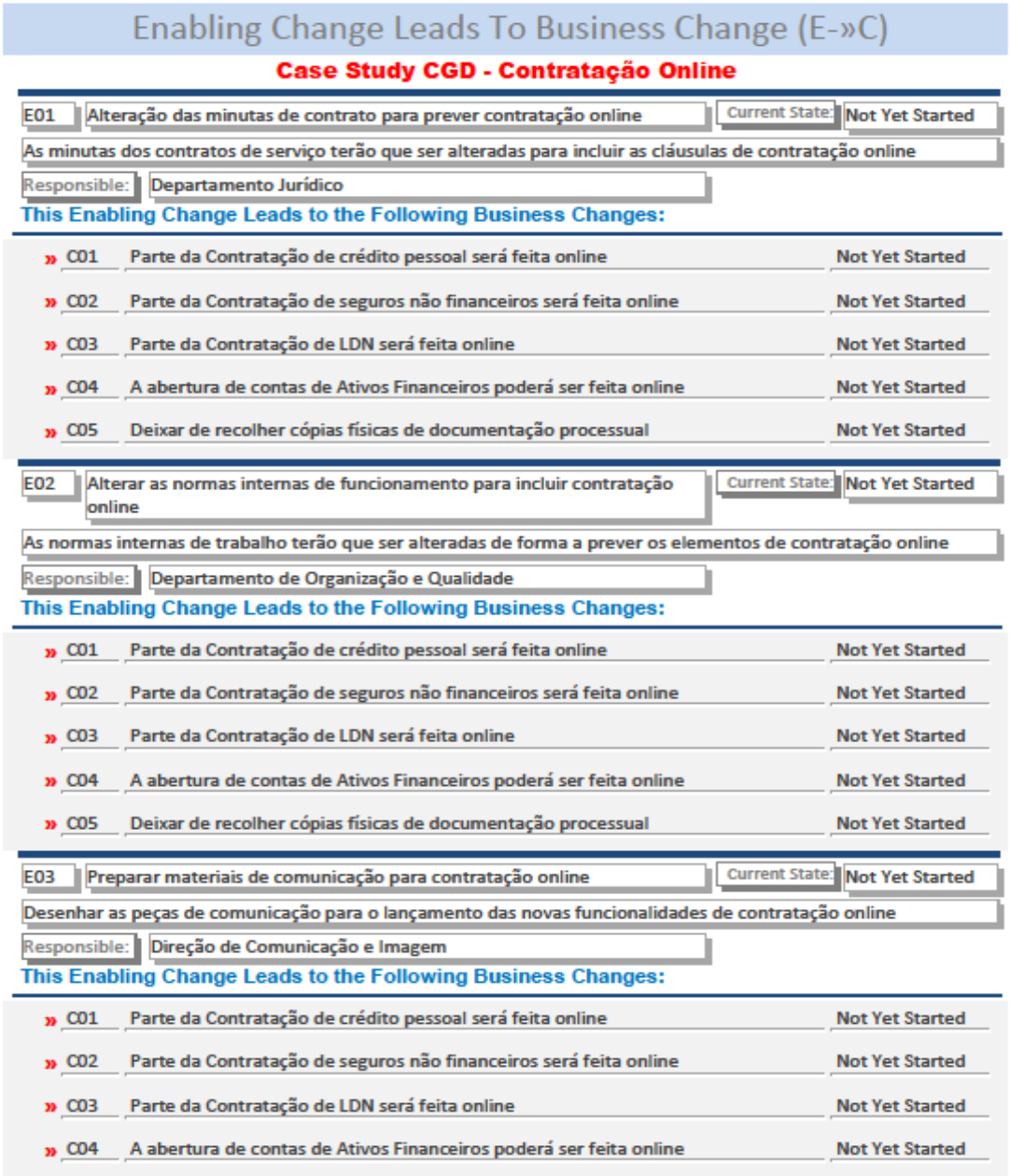
Atualmente, em cada processo de crédito, são recolhidos documentos em papel, que são enviados para os arquivos físicos do processo de cliente e posteriormente enviados para arquivo central, o que representa um custo significativo. Com a contratação online deixam de ser recolhidos documentos físicos, com a simplificação e poupança inerentes.

Responsible: Departamento de Organização e Qualidade

This Business Change was allowed by the Following IT Enablers:

»	I01	Alteração de processo na plataforma Agile para obtenção da ficha de cliente	Not Yet Started
»	I02	Criação de um novo canal de receção na plataforma Agile	Not Yet Started
»	I03	Alteração do front-end da Caixadireta Online	Not Yet Started

APPENDIX I1: BUSINESS CHANGES ALLOWED BY EACH ENABLING CHANGE (E-»C)



Enabling Change Leads To Business Change (E-»C)

Case Study CGD - Contratação Online

E01	Alteração das minutas de contrato para prever contratação online	Current State:	Not Yet Started

As minutas dos contratos de serviço terão que ser alteradas para incluir as cláusulas de contratação online

Responsible: Departamento Jurídico

This Enabling Change Leads to the Following Business Changes:

»	C01	Parte da Contratação de crédito pessoal será feita online	Not Yet Started
»	C02	Parte da Contratação de seguros não financeiros será feita online	Not Yet Started
»	C03	Parte da Contratação de LDN será feita online	Not Yet Started
»	C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Not Yet Started
»	C05	Deixar de recolher cópias físicas de documentação processual	Not Yet Started

E02	Alterar as normas internas de funcionamento para incluir contratação online	Current State:	Not Yet Started

As normas internas de trabalho terão que ser alteradas de forma a prever os elementos de contratação online

Responsible: Departamento de Organização e Qualidade

This Enabling Change Leads to the Following Business Changes:

»	C01	Parte da Contratação de crédito pessoal será feita online	Not Yet Started
»	C02	Parte da Contratação de seguros não financeiros será feita online	Not Yet Started
»	C03	Parte da Contratação de LDN será feita online	Not Yet Started
»	C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Not Yet Started
»	C05	Deixar de recolher cópias físicas de documentação processual	Not Yet Started

E03	Preparar materiais de comunicação para contratação online	Current State:	Not Yet Started

Desenhar as peças de comunicação para o lançamento das novas funcionalidades de contratação online

Responsible: Direção de Comunicação e Imagem

This Enabling Change Leads to the Following Business Changes:

»	C01	Parte da Contratação de crédito pessoal será feita online	Not Yet Started
»	C02	Parte da Contratação de seguros não financeiros será feita online	Not Yet Started
»	C03	Parte da Contratação de LDN será feita online	Not Yet Started
»	C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Not Yet Started

APPENDIX I2: ENABLING CHANGES THAT ALLOW EACH BUSINESS CHANGE (C-»E)

Busines Change Allowed By Enabling Changes (C-»E)

Case Study CGD - Contratação Online

C01	Parte da Contratação de crédito pessoal será feita online	Current State:	Not Yet Started

O cliente poderá fazer a contratação de um crédito pessoal apenas acedendo ao canal digital quer em webapp, quer em mobile app

Responsible: Responsável Unidade Banca Direta

This Business Change was allowed by the Following Enabling Changes:

»	E01	Alteração das minutas de contrato para prever contratação online	Not Yet Started
»	E02	Alterar as normas internas de funcionamento para incluir contratação online	Not Yet Started
»	E03	Preparar materiais de comunicação para contratação online	Not Yet Started

C02	Parte da Contratação de seguros não financeiros será feita online	Current State:	Not Yet Started

O cliente poderá fazer a contratação de um seguro não financeiro apenas acedendo ao canal digital quer em webapp, quer em mobile app

Responsible: Responsável Unidade Banca Direta

This Business Change was allowed by the Following Enabling Changes:

»	E01	Alteração das minutas de contrato para prever contratação online	Not Yet Started
»	E02	Alterar as normas internas de funcionamento para incluir contratação online	Not Yet Started
»	E03	Preparar materiais de comunicação para contratação online	Not Yet Started

C03	Parte da Contratação de LDN será feita online	Current State:	Not Yet Started

O cliente poderá fazer a contratação Limite Descoberto Negociado apenas acedendo ao canal digital quer em webapp, quer em mobile app

Responsible: Responsável Unidade Banca Direta

This Business Change was allowed by the Following Enabling Changes:

»	E01	Alteração das minutas de contrato para prever contratação online	Not Yet Started
»	E02	Alterar as normas internas de funcionamento para incluir contratação online	Not Yet Started
»	E03	Preparar materiais de comunicação para contratação online	Not Yet Started

C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Current State:	Not Yet Started

O cliente poderá abrir uma conta de ativos financeiros acedendo apenas à aplicação web ou móvel

Responsible: Responsável Unidade Banca Direta

This Business Change was allowed by the Following Enabling Changes:

»	E01	Alteração das minutas de contrato para prever contratação online	Not Yet Started
»	E02	Alterar as normas internas de funcionamento para incluir contratação online	Not Yet Started
»	E03	Preparar materiais de comunicação para contratação online	Not Yet Started

Case Study CGD - Contratação Online

C05	Deixar de recolher cópias físicas de documentação processual	Current State:	Not Yet Started

Atualmente, em cada processo de crédito, são recolhidos documentos em papel, que são enviados para os arquivos físicos do processo de cliente e posteriormente enviados para arquivo central, o que representa um custo significativo. Com a contratação online deixam de ser recolhidos documentos físicos, com a simplificação e poupança inerentes.

Responsible: Departamento de Organização e Qualidade

This Business Change was allowed by the Following Enabling Changes:

»	E01	Alteração das minutas de contrato para prever contratação online	Not Yet Started
»	E02	Alterar as normas internas de funcionamento para incluir contratação online	Not Yet Started

APPENDIX J1: BUSINESS BENEFITS ALLOEWD BY EACH BUSINESS CHANGE (C-»B)

Busines Change Leads To Business Benefits (C-»B)

Case Study CGD - Contratação Online

C01	Parte da Contratação de crédito pessoal será feita online	Current State:	Not Yet Started

O cliente poderá fazer a contratação de um crédito pessoal apenas acedendo ao canal digital quer em webapp, quer em mobile app

Responsible: Responsável Unidade Banca Direta

This Business Change Leads to the Following Business Benefits:

- » B01 Aumento do valor de Produto Bancário em Crédito Pessoal
- » B05 Redução de custos de arquivos físicos em papel
- » B06 Redução de recursos associados ao processo de negócio
- » B07 Redução da taxa de abandono de clientes por fecho de agências

C02	Parte da Contratação de seguros não financeiros será feita online	Current State:	Not Yet Started

O cliente poderá fazer a contratação de um seguro não financeiro apenas acedendo ao canal digital quer em webapp, quer em mobile app

Responsible: Responsável Unidade Banca Direta

This Business Change Leads to the Following Business Benefits:

- » B03 Aumento das comissões em Seguros não financeiros
- » B05 Redução de custos de arquivos físicos em papel
- » B06 Redução de recursos associados ao processo de negócio
- » B07 Redução da taxa de abandono de clientes por fecho de agências

C03	Parte da Contratação de LDN será feita online	Current State:	Not Yet Started

O cliente poderá fazer a contratação Limite Descoberto Negociado apenas acedendo ao canal digital quer em webapp, quer em mobile app

Responsible: Responsável Unidade Banca Direta

This Business Change Leads to the Following Business Benefits:

- » B02 Aumento da margem financeira para produtos de LDN
- » B05 Redução de custos de arquivos físicos em papel
- » B06 Redução de recursos associados ao processo de negócio
- » B07 Redução da taxa de abandono de clientes por fecho de agências

C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Current State:	Not Yet Started

O cliente poderá abrir uma conta de ativos financeiros acedendo apenas à aplicação web ou móvel

Responsible: Responsável Unidade Banca Direta

This Business Change Leads to the Following Business Benefits:

- » B04 Aumento das comissões em Novas de contas Guarda-título
- » B05 Redução de custos de arquivos físicos em papel
- » B06 Redução de recursos associados ao processo de negócio
- » B07 Redução da taxa de abandono de clientes por fecho de agências

Case Study CGD - Contratação Online

C05	Deixar de recolher cópias físicas de documentação processual	Current State:	Not Yet Started

Atualmente, em cada processo de crédito, são recolhidos documentos em papel, que são enviados para os arquivos físicos do processo de cliente e posteriormente enviados para arquivo central, o que representa um custo significativo. Com a contratação online deixam de ser recolhidos documentos físicos, com a simplificação e poupança inerentes.

Responsible: Departamento de Organização e Qualidade

This Business Change Leads to the Following Business Benefits:

»	B05	Redução de custos de arquivos físicos em papel
»	B06	Redução de recursos associados ao processo de negócio

APPENDIX J2: BUSINESS CHANGES NECESSARY TO OBTAIN EACH BUSINESS BENEFIT (B-»C)

Business Benefit Results From Business Changes (B-»C)

Case Study CGD - Contratação Online

B01	Aumento do valor de Produto Bancário em Crédito Pessoal	Financial
Responsible:	Responsável Unidade Banca Direta	

Aumento do valor cobrado em comissões de produtos de crédito pessoal e aumento da respetiva margem financeira.

Racional de cálculo do benefício:
Baixa quota de mercado de 8,8% e que não corresponde à posição da CGD no mercado ;
Para um objetivo de aumento de 10% no volume de contratação (cerca de 20 milhões), prevê-se obter no final do primeiro ano cerca de 525.000 € em produto bancário;
Como referência deve ser considerada a performance de colocação de cartões nos canais, que atualmente contribuem com 20 a 25% da produção total de cartões de crédito

This Business Benefit Dependes on the Following Business Changes:

» C01	Parte da Contratação de crédito pessoal será feita online	Not Yet Started

B02	Aumento da margem financeira para produtos de LDN	Financial
Responsible:	Responsável Unidade Banca Direta	

Aumento da margem para produtos de Limite de Descoberto Negociado (Descoberto em contas-ordenado)
Racional de Cálculo do Benefício:
50% dos clientes Caixa têm o ordenado domiciliado, no entanto, apenas 20% têm o limite descoberto associado;
Para um cenário (conservador) de aumento de 10% no volume de contratação (cerca 5.000 novas operações), prevê-se obter no final do primeiro ano cerca de 72.000 € em produto bancário;
Como referência deve ser considerada a performance de colocação de cartões nos canais, que atualmente contribuem com 20 a 25% da produção total de cartões de crédito.

This Business Benefit Dependes on the Following Business Changes:

» C03	Parte da Contratação de LDN será feita online	Not Yet Started

B03	Aumento das comissões em Seguros não financeiros	Financial
Responsible:	Responsável Unidade Banca Direta	

Aumentar as comissões cobradas na venda de seguros Não Financeiros.

Racional de Cálculo do Benefício:
Baixa quota de mercado de 13% e que não corresponde à posição da CGD no mercado ;
Para um objetivo de aumento de cerca de 10% no volume de contratação (cerca de 1,6 Milhões), prevê-se obter no final do primeiro ano cerca de 130.000 € em produto bancário;
Como referência deve ser considerada a performance de colocação de cartões nos canais, que atualmente contribuem com 20 a 25% da produção total de cartões de crédito

This Business Benefit Dependes on the Following Business Changes:

» C02	Parte da Contratação de seguros não financeiros será feita online	Not Yet Started

Case Study CGD - Contratação Online

B04	Aumento das comissões em Novas de contas Guarda-título	Financial
Responsible:	Responsável Unidade Banca Direta	

Por via de uma maior contratação de contas de ativos financeiros, teremos um aumento das comissões.

Racional de Cálculo do Benefício:
A proporção de Clientes ativos (particulares) que detêm uma Conta de Investimentos ativa é de 7%, enquanto que a média bancária nacional situa-se nos 18%;
A penetração digital da Caixa ao nível das Contas de Investimento (Clientes de Investimento digitais/Total de Clientes de Investimento) é de 44%, ao passo que a média nacional situa-se nos 70%;
Como referência deve ser considerada a performance da CGD (gestão de 18.000 clientes) na OTRV de 2016 foram colocados 610.000€. Para um cenário de alargamento para mais 150.000 (altamente conservador) e apenas considerando emissões bianuais de OTRV, prevê-se obter cerca de 77.000 € de comissões no final do primeiro ano.
Para efeitos de benefício não foram contabilizados comissões de guarda de títulos. No caso da subida de 1% (de 7 para 8%), o acréscimo de comissões de guarda de títulos no final do primeiro ano, seria de 560.000€ e considerando que apenas 30% das novas contas teriam títulos em carteira.

This Business Benefit Dependes on the Following Business Changes:

» C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Not Yet Started

B05	Redução de custos de arquivos físicos em papel	Measurable
Responsible:	Departamento de Organização e Qualidade	

Os documentos físicos em papel que são atualmete recolhidos nos balcões deixarão de existir com os novos processos feitos online, assim reduzindo os custos de armazenamento.

This Business Benefit Dependes on the Following Business Changes:

» C01	Parte da Contratação de crédito pessoal será feita online	Not Yet Started
» C02	Parte da Contratação de seguros não financeiros será feita online	Not Yet Started
» C03	Parte da Contratação de LDN será feita online	Not Yet Started
» C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Not Yet Started
» C05	Deixar de recolher cópias físicas de documentação processual	Not Yet Started

B06	Redução de recursos associados ao processo de negócio	Measurable
Responsible:	Responsável Unidade Banca Direta	

Ao alocar menos recursos humanos e/ou materiais aos processos de contratação dos produtos abrangidos (custos fixos de contacto direto com os clientes), esses recursos poderão ser reutilizados em outros processos.
O valor utilizado é o de "Cost-to-Serve"

This Business Benefit Dependes on the Following Business Changes:

» C01	Parte da Contratação de crédito pessoal será feita online	Not Yet Started
» C02	Parte da Contratação de seguros não financeiros será feita online	Not Yet Started
» C03	Parte da Contratação de LDN será feita online	Not Yet Started
» C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Not Yet Started
» C05	Deixar de recolher cópias físicas de documentação processual	Not Yet Started

B07	Redução da taxa de abandono de clientes por fecho de agências	Measurable
Responsible:	Responsável Unidade Banca Direta	

A tendência atual de fecho de agências bancárias terá provavelmente um efeito de aumento da taxa de churn. Este projeto deverá ajudar a reduzir este efeito, mantendo a proximidade digital com os clientes.
Esta contribuição só poderá ser medida através de um questionário ao fim de um ano de utilização do projeto, onde se poderá questionar clientes que adquiriram produtos através deste novo canal para averiguar se o canal teve alguma influência na sua decisão de não abandono.

This Business Benefit Dependes on the Following Business Changes:

Case Study CGD - Contratação Online

»	C01	Parte da Contratação de crédito pessoal será feita online	Not Yet Started
»	C02	Parte da Contratação de seguros não financeiros será feita online	Not Yet Started
»	C03	Parte da Contratação de LDN será feita online	Not Yet Started
»	C04	A abertura de contas de Ativos Financeiros poderá ser feita online	Not Yet Started

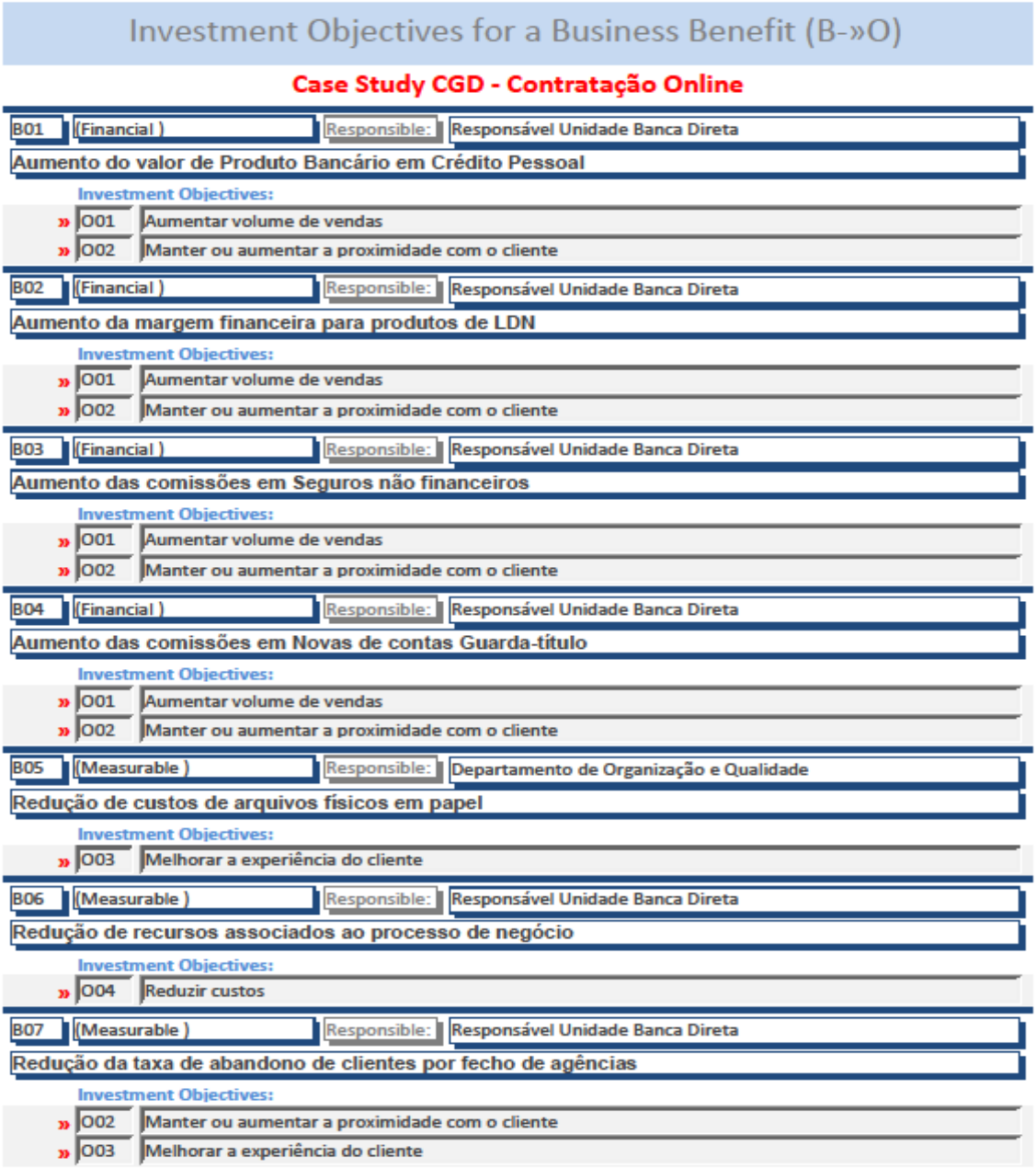
APPENDIX K1: BUSINESS BENEFITS RELATED TO EACH INVESTMENT OBJECTIVE (O-»B)

Business Benefits related to an Investment Objective (O-»B)

Case Study CGD - Contratação Online

O01	Aumentar volume de vendas		
Ao criar mais um canal de vendas, poderemos aumentar o volume de vendas			
This Investment Objective Results from the following Business Benefits:			
» B01	(Financial)	Aumento do valor de Produto Bancário em Crédito Pessoal	Expected by: 31/12/201
» B02	(Financial)	Aumento da margem financeira para produtos de LDN	Expected by: 31/12/201
» B03	(Financial)	Aumento das comissões em Seguros não financeiros	Expected by: 31/12/201
» B04	(Financial)	Aumento das comissões em Novas de contas Guarda-título	Expected by: 31/12/201
O02	Manter ou aumentar a proximidade com o cliente		
Fazer face à redução do número de agências, mantendo ou mesmo aumentando a proximidade e envolvimento com o cliente.			
This Investment Objective Results from the following Business Benefits:			
» B01	(Financial)	Aumento do valor de Produto Bancário em Crédito Pessoal	Expected by: 31/12/201
» B02	(Financial)	Aumento da margem financeira para produtos de LDN	Expected by: 31/12/201
» B03	(Financial)	Aumento das comissões em Seguros não financeiros	Expected by: 31/12/201
» B04	(Financial)	Aumento das comissões em Novas de contas Guarda-título	Expected by: 31/12/201
» B07	(Measurable)	Redução da taxa de abandono de clientes por fecho de agências	Expected by: TBD
O03	Melhorar a experiência do cliente		
Reduzir a complexidade processual e burocrática na relação com os nossos clientes			
This Investment Objective Results from the following Business Benefits:			
» B05	(Measurable)	Redução de custos de arquivos físicos em papel	Expected by: TBD
» B07	(Measurable)	Redução da taxa de abandono de clientes por fecho de agências	Expected by: TBD
O04	Reduzir custos		
Neste estado da economia, todas as instituições financeiras têm como objetivo reduzir os custos operacionais. Este objetivo de redução de custos está presente em todas as intervenções.			
This Investment Objective Results from the following Business Benefits:			
» B06	(Measurable)	Redução de recursos associados ao processo de negócio	Expected by: TBD

APPENDIX K2: INVESTMENT OBJECTIVES RELATED TO EACH BUSINESS BENEFIT (B-»O)



Investment Objectives for a Business Benefit (B-»O)

Case Study CGD - Contratação Online

B01	(Financial)	Responsible:	Responsável Unidade Banca Direta

Aumento do valor de Produto Bancário em Crédito Pessoal

Investment Objectives:

»	O01	Aumentar volume de vendas
»	O02	Manter ou aumentar a proximidade com o cliente

B02	(Financial)	Responsible:	Responsável Unidade Banca Direta

Aumento da margem financeira para produtos de LDN

Investment Objectives:

»	O01	Aumentar volume de vendas
»	O02	Manter ou aumentar a proximidade com o cliente

B03	(Financial)	Responsible:	Responsável Unidade Banca Direta

Aumento das comissões em Seguros não financeiros

Investment Objectives:

»	O01	Aumentar volume de vendas
»	O02	Manter ou aumentar a proximidade com o cliente

B04	(Financial)	Responsible:	Responsável Unidade Banca Direta

Aumento das comissões em Novas de contas Guarda-título

Investment Objectives:

»	O01	Aumentar volume de vendas
»	O02	Manter ou aumentar a proximidade com o cliente

B05	(Measurable)	Responsible:	Departamento de Organização e Qualidade

Redução de custos de arquivos físicos em papel

Investment Objectives:

»	O03	Melhorar a experiência do cliente

B06	(Measurable)	Responsible:	Responsável Unidade Banca Direta

Redução de recursos associados ao processo de negócio

Investment Objectives:

»	O04	Reduzir custos

B07	(Measurable)	Responsible:	Responsável Unidade Banca Direta

Redução da taxa de abandono de clientes por fecho de agências

Investment Objectives:

»	O02	Manter ou aumentar a proximidade com o cliente
»	O03	Melhorar a experiência do cliente